

PROGRAMMATIC INITIAL ENVIRONMENTAL EXAMINATION

PROJECT/ACTIVITY DATA

Project Name:	Resilience in the Sahel Enhanced II (RISE II) Project Appraisal Document (PAD) Programmatic Initial Environmental Examination (PIEE) (Sahel RISE II PIEE)
Amendment (Y/N):	No
Geographic Location(s) (Country/Region):	Sahel Regional Office (SRO)/Burkina Faso and Niger
Implementation Start/End:	September 2018 to July 2023
Solicitation/Contract/Award Number:	RFI-625-18-RISE-II-IEE or Natural resource
Implementing Partner(s):	Multiple
Tracking ID/ECD Permalink:	Sahel RISE II PAD PIEE.0712.2018 https://ecd.usaid.gov/document.php?doc_id=51010
Tracking ID/link of Related RCE/IEE (if any):	<p>2013 Sahel JPC (23 January 2013) https://ecd.usaid.gov/repository/pdf/39036.pdf</p> <p>2014 REGIS-ER/RISE – [Amendment to Sahel JPC] (31 March 2015) https://ecd.usaid.gov/repository/pdf/46156.pdf</p> <p>2018 REGIS-ER/RISE Amendment (29 January 2018) https://ecd.usaid.gov/document.php?doc_id=50615</p> <p>Parallel FFP investments contributing to RISE II are under DCHA BEO, covered under a separate Programmatic IEE located at https://ecd.usaid.gov/repository/pdf/50497.pdf</p> <p>Sahel REGIS PERSUAP Burkina Niger 2018_2020_07.12.2018 https://ecd.usaid.gov/document.php?doc_id=51005</p>
Tracking ID/link of Other, Related Analyses:	<p>SRO PERSUAP [Add ECD when available] – under review</p> <p>Power Africa PATRP (30 August 2016) https://ecd.usaid.gov/document.php?doc_id=48721</p> <p>FFP FY18 RFA IEE (9 March 2018) https://ecd.usaid.gov/document.php?doc_id=50497</p>

	<p>GHSC-PSM (1 June 2017) https://ecd.usaid.gov/document.php?doc_id=50325</p> <p>2017 Burkina Faso ASTER (28 September 2017) https://ecd.usaid.gov/document.php?doc_id=50407</p> <p>2017 Burkina Faso Malaria Care Project (14 June 2017) https://ecd.usaid.gov/document.php?doc_id=50164</p> <p>USAID Programmatic Environmental Assessment (PEA) for Phosphine Fumigation of Stored Agricultural Commodity (November 2013) http://www.usaidgems.org/fumigationpea.htm ASHA Termiticide Programmatic PERSUAP [Add ECD when available] – under review</p> <p>Alliance for Year-Round Resilience in Tahoua and Maradi (GDA with Lutheran World Relief (1 June 2017) https://ecd.usaid.gov/document.php?doc_id=50129</p>
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ORGANIZATIONAL/ADMINISTRATIVE DATA

Implementing Operating Unit(s): (e.g. Mission or Bureau or Office)		Sahel Regional Office	
Funding Operating Unit(s): (e.g. Mission or Bureau or Office)		Sahel Regional Office	
Funding Account(s):		ESDF, GH, IDA, TI, CCF (others TBD)	
Funding Amount:		\$211,765,811	
Amendment Funding Date:	N/A	Amendment Funding Amount:	N/A
Other Affected Unit(s):		BFS, GH, GDL (others TBD)	
Lead BEO Bureau:		Africa	
Prepared by:		Arianne Neigh, Stella Siegel (GEMS II)	
Date Prepared:		25 June 2018	

ENVIRONMENTAL COMPLIANCE REVIEW DATA

Analysis Type:	<input checked="" type="checkbox"/> Request for Categorical Exclusion <input type="checkbox"/> Amendment <input checked="" type="checkbox"/> Initial Environmental Examination <input checked="" type="checkbox"/> Deferral
Environmental Determination(s):	<input checked="" type="checkbox"/> Negative Determination <input checked="" type="checkbox"/> Positive Determination <input checked="" type="checkbox"/> Negative Determination w/ Conditions <input checked="" type="checkbox"/> ERR/EMMP <input checked="" type="checkbox"/> PERSUAP
Expiration Date:	25 June 2023
Additional Analyses/Reporting Required:	<input checked="" type="checkbox"/> Climate Risk Management (CRM), see Sect. 4.1 and Annex A.

	<input checked="" type="checkbox"/> Supplemental IEE(s) (Sect. 1.1) The Programmatic IEE requires that a Supplemental IEE be developed and approved for each activity under the RISE II PAD, using RISE II Supplemental IEE template (to include Activity-level CRM)		
Climate Risks Identified:	Low <u> x </u>	Moderate <u> x </u>	High <u> x </u>
Climate Risks Addressed:	Low <u> x </u>	Moderate <u> x </u>	High <u> x </u>

THRESHOLD DECISION MEMO AND SUMMARY OF FINDINGS

PURPOSE AND SCOPE OF THE INITIAL ENVIRONMENTAL EXAMINATION

The purpose of this document, in accordance with Title 22, Code of Federal Regulations, Part 216 (22CFR216), is to provide a preliminary review of the reasonably foreseeable effects on the environment of the Resilience in the Sahel Enhanced II (RISE II) Project. In accordance with established USAID/Bureau for Africa (AFR) practice in implementing 22 CFR 216, a Programmatic Initial Environmental Examination (IEE) is employed to ensure consistency of determinations, conditions, and environmental management across the proposed action or set of actions to be replicated at multiple geographically separated sites, under one or more awards or implementing mechanisms included in the RISE II Project Appraisal Document (PAD). Upon approval, these determinations become affirmed, per 22CFR216 and specified conditions become mandatory obligations of implementation. This Programmatic IEE requires activity design teams to develop Supplemental IEEs for each award/activity.

The Programmatic IEE also documents the results of the project-level Climate Risk Management (CRM) process in accordance with USAID policy (specifically, Automated Directives Systems [ADS] 201mal).

New development assistance activities under the RISE II PAD, will be subject to the conditions of this Programmatic IEE. Separate Food for Peace (FFP) investments contributing to RISE II are under the purview of the Bureau for Democracy, Conflict, and Humanitarian Assistance (DCHA) Bureau Environmental Officer (BEO) and are covered under a separate Programmatic IEE located at <https://ecd.usaid.gov/repository/pdf/50497.pdf>. *FFP implementing partners will prepare, and USAID will approve, Supplementary IEEs during the first year of implementation.*

Likewise, RISE II may also contribute to some centrally-managed Bureau for Global Health (GH) activities under the purview of the GH BEO. Supplemental IEEs will include information required by any of the applicable GH Programmatic or Global IEEs.

PROJECT SUMMARY

The RISE II Project builds upon the existing RISE I actions in the Sahel, targeting vulnerable populations in Burkina Faso and Niger to bring them out of poverty along sustainable pathways. The goal of USAID's RISE II is to assist chronically vulnerable populations in Burkina Faso and Niger, supported by resilient systems, to effectively manage shocks and stresses and pursue

sustainable pathways out of poverty. The activities supporting this goal will all incorporate cross-cutting issues of gender, youth, risk management, and governance.

The RISE II goal is transformational, seeking to enhance individual, household, community, and institutional capacities that can sustain and continue to grow improvements in well-being in the face of a dynamic context of challenges and opportunities. These transformational aspects are embodied in the following RISE II transformative development outcomes to which all activities will contribute:

- Enhanced community leadership of local development
- Enhanced social capital through strengthened ties of mutual assistance among people
- Enhanced capacity to learn and adapt among beneficiaries, local partners, and partner governments

ENVIRONMENTAL DETERMINATIONS

Upon approval, recommended determinations become affirmed, per 22CFR216 and specified conditions, detailed in Section 5, become mandatory obligations of implementation per ADS 204.

Categorical Exclusions are recommended for actions that are (1) clearly within the categories of actions identified by 22 CFR 216.2(c)(2) as being eligible for categorical exclusion; and (2) have no foreseeable direct or indirect environmental impacts.

Negative Determinations are recommended for actions that meet BOTH the following:

1. The actions are NOT within the classes of actions eligible for categorical exclusion; AND
2. one of the following applies:
 - a. they have no foreseeable adverse impacts;
 - b. they are mitigation measures for other actions;
 - c. they have foreseeable adverse impacts, but these are not significant and appropriate mitigations are already built into their design or specification; or
 - d. they have foreseeable adverse impacts, but these are not significant and are also indirect, with mitigation beyond the control of USAID.

Negative Determinations with Conditions are recommended for actions which, based on the impacts analysis, are highly unlikely to result in significant adverse impacts. This includes instances in which the impacts of the unmitigated action could be significant, but technically straightforward, easily monitorable, and mitigation as specified by the condition(s) will reliably prevent impacts from becoming significant. Conditions are those requirements, or specific mitigation measures applicable, to the project planning, implementation, and operation.

As a condition, some actions, where noted, due to sub-grants or sub-awards being used, may require **subsidiary review** in the form of an Environmental Review Form (ERF) and associated Environmental Review Report (ERR) (<http://www.usaidgems.org/subsidiary.htm>).

Positive Determinations. A positive determination is associated with actions that have a significant impact on the environment, or those actions which by regulation per 216.2(d), generally have a significant impact on the environment. Actions outside of these specific categories may also receive a positive determination based on an understanding of the scope and breadth of the action at the time that the IEE is drafted.

Deferrals. A deferral of a threshold determination is recommended for actions for which there is not enough information on location, actions, or scope of actions available at the time of drafting this Programmatic IEE to make a threshold determination. Deferrals must be cleared (i.e. a threshold determination must be approved via a Supplemental IEE or amendment) prior to irreversible commitment of funds to that action. Specific requirements of the Supplemental IEE are noted in Table 5 for some actions with deferrals. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.

TABLE 1. ENVIRONMENTAL DETERMINATIONS

Actions	Negative Determination	Positive Determination	Supplemental IEE Required	Deferral ¹	Social Impacts Considerations
Intervention Category A — Natural Resource Management (NRM) and Mixed NRM	√		√	√	√
Intervention Category B — Rangeland Management and Livestock Production/Management	√		√		√
Intervention Category C — Fisheries and Aquaculture	√	√	√	√	√
Intervention Category D — WASH	√		√	√	√
Intervention Category E — Irrigation and Livestock Water Points	√		√	√	
Intervention Category F — Business Development and Finance	√		√	√	√
Intervention Category G — Infrastructure and Construction Intervention Category H — Health	√		√		

¹ Deferrals must be cleared through an Amendment to this IEE, or a Supplemental IEE, prior to implementation of any deferred activities. USAID/IPs may utilize the Environmental Screening Tool to assess impacts of deferred activities.

Intervention Category I —	√	√	√	√	
Agriculture					

CLIMATE RISK MANAGEMENT

The CRM screening of this PAD was undertaken by USAID/SRO staff, in collaboration with USAID/AFR, USAID/Niger, and USAID/Burkina Faso. The CRM process was initiated early in PAD development to ensure that climate risks, opportunities and risk mitigations options could be fully integrated into the overall technical approach. Given that USAID/SRO does not have a Country Development and Cooperation Strategy (CDCS), and that RISE II is largely meant to build resilience to the climate-sensitive and complex nature of the target zones, USAID/SRO designed the CRM screening as an iterative process that continued throughout PAD development. USAID/SRO felt this was important given the integrated nature of the program, especially as many sub-IRs could be negatively affected by upstream climate impacts that are best addressed through activities spread across several Development Objectives (DOs). The CRM process also served to cross-check implicit assumptions embedded within the Results Framework on climate risks and climate risk mitigation strategies, and to identify next-level assessments and analysis needs.

Through the screening, almost all IRs and sub-IRs were found to experience moderate to high risk from climate variability and change. As many of the shocks and stresses experienced in Niger and Burkina Faso are climate-induced, climate risk mitigation strategies have been included within the core design of the RISE II program. Furthermore, these climate shocks and stresses affect people in multifaceted and differentiated ways. Therefore, RISE II was designed such that each DO supports and complements the others to ensure climate risks, including both up- and downstream risks, are addressed through multiple interventions. For example, droughts are not only addressed through increased risk management in DO1 and through more drought resilient livelihoods and increased access to insurance in DO2. These risks are also addressed through downstream interventions in the health sector (e.g., health systems strengthening (DO3)) and improved flexibility in governance (DO4). The resilience approach adopted in RISE II will help ensure that climate risks do not undermine the program's objective of helping people achieve a sustainable pathway to self-sufficiency.

BEO SPECIFIED CONDITIONS OF APPROVAL

BEO Standard Conditions. In addition to the specific conditions enumerated in Section 5, the negative determinations recommended in this IEE are contingent on full implementation of a set of general monitoring and implementation requirements specified here.

1.1 The Design Lead or Agreement/Contracting Officer's Representative (A/COR) will develop Supplemental IEEs for their activities because the application of 22 CFR 216 must be appropriately informed by site-specific conditions and appropriately applied to the specific award/activity. Toward this end, as a general condition of approval, this Programmatic IEE requires that a Supplemental IEE be developed and approved for each activity under the RISE II PAD by the A/COR or the activity design team. These Supplemental IEEs will:

- a) **Provide additional specific details** regarding the activity and its entailed actions, including location (environmental baseline), and the impacts associated with all actions.
- b) **Consolidate all required conditions.** For actions addressed by the Programmatic IEE, Supplemental IEEs *must, at a minimum*, include the conditions for these actions as established by the Programmatic IEE and confirm that no additional activities are planned for the activity at the time of completion. Additional or more stringent conditions or determinations must be recommended as indicated and documented within the supplemental IEE.
- c) **Rectify any deferrals from the Programmatic IEE** for the planned award/activity.
- d) Define and fully comply with 22 CFR 216 requirements for **actions** that may not have been addressed in the Programmatic IEE because they were defined during the activity design process rather than at the PAD level. This includes establishing determinations, and as relevant, conditions for these actions.
- e) **Provide direction for the development of an Environmental Assessment** or Scoping Environmental Assessments for actions identified as a Positive Determination.
- f) Specifically **direct the actions of the implementing partners** in the development of necessary subsidiary environmental compliance documentation, including:
 - i) the Environmental Mitigation and Monitoring Plan (EMMP) for actions assigned a negative determination with conditions in the Supplemental IEE (both new conditions and those reiterated from the Programmatic IEE)
 - ii) development and implementation of the ERF/ERR for sub-grants and sub-awards. The ERR can become the face sheet for the EMMP.

1.2 The A/COR will ensure appropriate environmental compliance language, including standard limitations defined in the IEEs, be incorporated into solicitations and awards for these activities. These requirements will ensure:

- a) Each A/COR with the support of the Mission Environmental Officer (MEO) must develop an Activity-level Supplemental IEE (using the RISE II Supplemental IEE template), including Activity-level CRM screening, and obtain approval by the MEO, Regional Environmental Officer (REO), and BEO(s). These Supplemental IEEs will draw upon this RISE II Programmatic IEE and refer to the DCHA FFP FY18 Request for Applications IEE. Conditions from the Supplemental IEE (inclusive of those already defined in this Programmatic IEE) **must** be integrated into the Activity design, staffing, and budget as appropriate or required in order to ensure Activity compliance with the conditions.
- b) The A/COR must provide the approved Supplemental IEE to the IP upon award and prior to project start-up. Implementing partners (IPs) must develop, obtain approval for, and fully implement EMMPs, environmental mitigation and monitoring reports (EMMRs), as appropriate to the projects/activities. The EMMPs include the actions assigned a negative determination with conditions in the Supplemental IEE (both new conditions

and those reiterated from the Programmatic IEE); and guide the development and implementation of the ERF/ERR for sub-grants and sub-awards.

- c) IPs integrate EMMPs in work plans and ensure adequate budget to fully comply with requirements including EMMP implementation and monitoring.
- d) IPs report on monitoring actions and take corrective measures when issues are identified.
- e) Solicitations include Statements of Work with task(s) for meeting environmental compliance requirements and appropriate evaluation criteria.
- f) Ensure integration of compliance responsibilities in prime and sub-grants agreements and contracts.
- g) IP use the Environmental Review Form to screen sub-grant applications and to aid in development of EMMPs as well as document baseline conditions and screen for activity specific impacts to ensure environmental, health, and safety safeguards are adequately programmed.
- h) Ensure sub-grantees and sub-contractors have capacity to fully carry out environmental compliance requirements.
- i) IPs will ensure Compliance with partner country regulations. Implementation will adhere to applicable partner country environmental laws.

1.3 The A/COR will review the Supplemental IEEs against all annual work plans to ensure all planned actions remain covered by the IEE and if new actions are identified which fall outside the scope of this IEE, an Amendment will be provided to the BEO for concurrence.

1.4 The A/COR, with the support of the MEO upon request, is responsible for monitoring compliance of actions by means of desktop reviews and site visits.

1.5 The A/COR is responsible for preparing appropriate environmental compliance documentation for new or modified project/activity components (such as amendments to the Supplemental IEE).

1.6 The A/COR and/or MEO will provide briefings for the IP on environmental compliance responsibilities.

1.7 The A/COR will obtain BEO clearance for any deferrals prior to implementation of deferred actions.

1.8 The A/COR will ensure that Negative Determination with Conditions and Positive Determination threshold decisions are followed by appropriate environmental analyses and development and implementation of mitigation and monitoring measures.

1.9 If at any time the project is found to be out of compliance with this Programmatic IEE or the associated Supplemental IEEs, the A/COR, MEO, and/or REO shall immediately notify the BEO.

1.10 The BEO or designated representative may conduct site visits or request additional information for compliance monitoring purposes to ensure compliance with the IEEs, as necessary.

1.11 All EMMPs shall be reviewed and approved by A/COR, MEO, and REO.

1.12 The A/COR will ensure that an EMMP will be prepared and submitted by the IP, and that an Environmental Assessment is conducted and report prepared, for approval by USAID prior to implementation of actions receiving a Negative Determination with Conditions and Positive Determination respectively.

1.13 Changes in actions and their associated EMMPs require amending the IEE (or Supplemental IEE as appropriate).

1.14 The A/COR shall keep and maintain environmental compliance documents in the official project file and submit to the MEO or REO upon request for internal quality reviews or AFR best practice reviews (BPRs).

1.15 Nothing in this document substitutes for or supersedes IP's or sub-awardee's/-grantee's/-contractor's responsibility for compliance with all applicable partner country laws and regulations. They must comply with local environmental regulations unless otherwise directed in writing by USAID. However, in the case of a conflict between partner country and USAID regulations, the latter shall govern.


1.16 The IP will prepare a closeout plan consistent with contract documentation for A/COR review and approval that outlines responsibilities for end-of-project operation, for example, clean-up and disposal of veterinary supplies, construction, surplus pesticide and other wastes, and/or transition of other operational responsibilities. Where identified as needed, the closeout/transition operation will provide training to support continuity of environmental responsibilities. The A/COR will ensure the IP sign and submits a Record of Compliance with the EMMP certifying that the organization met all applicable EMMP conditions.

IMPLEMENTATION

In accordance with 22CFR216 and Agency policy, the conditions and requirements of this document become mandatory upon approval. This includes the relevant limitations, conditions and requirements in this document as stated in Sections 4, 5, and 6 of the IEE and any BEO Specified Conditions of Approval.

USAID APPROVAL OF INITIAL ENVIRONMENTAL EXAMINATION

PROJECT NAME: Resilience in the Sahel Enhanced II (RISE II)

Clearance:  6/26/18
 Lisa Franchett: Mission Director Date

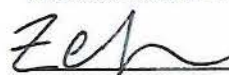
Concurrence  7/12/18
 Brian D. Hirsch: Africa Bureau Environmental Officer Date

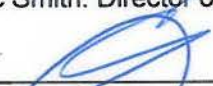
WIK
7/10/18

Concurrence  7/12/18
 IEE File Name (AFR BEO): Sahel RISE II PAD PIEE.71218
 Digitally signed by Dennis W Durbin
 Date: 2018.07.12 14:26:34 -0400
 Dennis Durbin: GH Bureau Environmental Officer Date

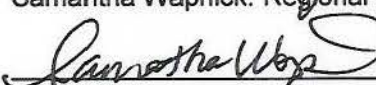
Concurrence  7-3-2018
 William Thomas: BFS Bureau Environmental Officer Date

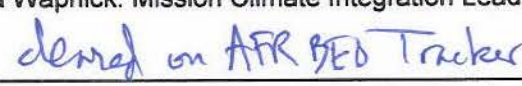
Clearance:  6/26/2018
 Isabelle Mulin: Director of Sahel Regional Program Office Date

Clearance:  + Acting Deputy M.D. 6/26/18
 Zeric Smith: Director of Sahel Regional Technical Office Date

Clearance:  6/26/18
 Abdourahmane Ndiaye: Mission Environmental Officer Date

Clearance:  6/26/18
 Samantha Wapnick: Regional Environmental Officer Date

Clearance:  6/26/18
 Samantha Wapnick: Mission Climate Integration Lead Date

Clearance:  7/10/18
 Roopa Karia, AFR Bureau Climate Integration Lead Date

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ACRONYMS

22 CFR 216	Title 22, Code of Federal Regulations, Part 216
ABO	Agency Biosafety Officer
A/COR	Agreement/Contracting Officer's Representative
ADS	Automated Directives System
AFPR	Attestation de Possession Foncière Rurale
AFR	Bureau for Africa
BEO	Bureau Environmental Officer
BFS	Bureau for Food Security
BMP	Best Management Practices
BPR	Best Practice Review
CBNRM	Community-Based Natural Resource Management
CBO	Community Based Organizations
CCA	Cultivable Command Area
CDCS	Country Development Cooperation Strategy
CGCT	General Charter of Territorial Collectives
CILSS	Permanent Interstate Committee for Drought Control in the Sahel
CREWS	Climate Risk and Early Warning Systems
CRM	Climate Risk Management
CSA	Climate Smart Agriculture
CVD	Conseil Villageois de Développement
CVE	Countering Violent Extremism
CVGT	Commission Villageoise de Gestion des Terroirs
DCA	Development Credit Authority
DCHA	Bureau for Democracy, Conflict, and Humanitarian Assistance
DFAP	Development Food Assistance Projects
DO	Development Objective
DRR	Disaster Risk Reduction
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMMP	Environmental Mitigation and Monitoring Plan
EMMR	Environmental Mitigation and Monitoring Report
ERF	Environmental Review Form
ERR	Environmental Review Report
FAA	Foreign Assistance Act
FAO	Food and Agricultural Organization
FCPB	Faitiere des Caisses Populaires du Burkina
FFP	Food for Peace
FMNR	Farmer-Managed Natural Regeneration
GCC	Global Climate Change
GDP	Gross Domestic Product
GE	Genetically Engineered
GFDRR	Global Facility for Disaster Reduction and Recovery
GFW	Global Forest Watch
GH	Bureau for Global Health

GHG	Greenhouse Gas
GIS	Geographic Information Systems
IEE	Initial Environmental Examination
IP	Implementing Partner
IPM	Integrated Pest Management
IR	Intermediate Result
IUCN	International Union for Conservation of Nature
JPC	Joint Planning Cell
MCHN	Maternal and Child Health and Nutrition
MEO	Mission Environmental Officer
NAP	National Adaptation Plan
NDwC	Negative Determination with Conditions
NGO	Non-Governmental Organizations
NRM	Natural Resource Management
ONEA	National Office of Water and Sanitation
PAD	Project Appraisal Document
PEA	Programmatic Environmental Assessment
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
PPE	Personal Protective Equipment
PPP	Public Private Partnership
PRAPS	Project Regional d'Appui au Pastoralisme au Sahel
PVO	Private Voluntary Organizations
REGIS-AG	Resilience and Economic Growth in the Sahel – Accelerated Growth
REGIS-ER	Resilience and Economic Growth in the Sahel – Enhanced Resilience
REO	Regional Environmental Officer
RISE	Resilience in the Sahel Enhanced
RMNCAH	Reproductive, Maternal, Newborn, Child and Adolescent Health.
SAREL	Sahel Resilience Learning
SWC	Soil and Water Conservation
SME	Small and Medium Enterprises
SRO	Sahel Regional Office
WASH	Water, Sanitation, and Hygiene
WFP	World Food Program
WHO	World Health Organization
WQAP	Water Quality Assurance Plan

1.0 PROJECT DESCRIPTION

1.1 PURPOSE AND SCOPE OF THE PROGRAMMATIC INITIAL ENVIRONMENTAL EXAMINATION

Overview. The purpose of this document, in accordance with Title 22, Code of Federal Regulations, Part 216 (22CFR216), is to provide a preliminary review of the reasonably foreseeable effects on the environment of the USAID intervention described herein and recommend determinations and, as appropriate, conditions, for these actions. Upon approval, these determinations become affirmed, per 22CFR216 and specified conditions become mandatory obligations of implementation. This Programmatic Initial Environmental Examination (Programmatic IEE) also documents the results of the project-level Climate Risk Management (CRM) process in accordance with USAID policy (specifically, Automated Directives Systems [ADS] 201mal).

Background of Programmatic IEEs. In accordance with established USAID/Bureau for Africa (AFR) practice in implementing 22 CFR 216, Programmatic IEEs may be employed to ensure consistency of determinations, conditions, and environmental management across a proposed action or set of actions to be replicated at multiple geographically separated sites, under one or more awards or implementing mechanisms. Programmatic IEEs ensure that cumulative impacts are addressed and guide development of Supplemental IEEs, as may be required.

This Programmatic IEE fulfills these general purposes of Programmatic IEEs for awards/activities under the Resilience in the Sahel Enhanced II (RISE II) Project Appraisal Document (PAD). As detailed below, and in the general conditions section, ***it requires activity design teams to develop Supplemental IEEs for each award/activity.*** Please consult your Regional Environmental Officer (REO) or Mission Environmental Officer (MEO) for the Supplemental IEE template.

Supplemental IEEs. The application of 22 CFR 216 must be appropriately informed by site-specific conditions and applied to the specific award/activity. Toward this end, as a general condition of approval, this ***Programmatic IEE requires that a Supplemental IEE be developed and approved for each activity under the RISE II PAD.*** These Supplemental IEEs will:

- 1) **Provide additional specific details** regarding activity and its entailed actions, including location (environmental baseline), and the impacts associated with all actions.
- 2) **Consolidate all required conditions.** For actions addressed by the Programmatic IEE, Supplemental IEEs must, at a minimum, include the conditions for these actions as established by the Programmatic IEE and confirm that no additional activities are planned for the activity at the time of completion. Additional or more stringent conditions or determinations must be recommended as indicated and documented within the Supplemental IEE.
- 3) **Rectify any deferrals from the Programmatic IEE** for the planned award/activity.
- 4) Define and fully comply with 22 CFR 216 requirements for **actions that may not have been addressed** in the Programmatic IEE because they were defined during the activity

design process rather than at the PAD-level. This includes establishing determinations and, as relevant, conditions for these actions.

- 5) **Provide direction for the development of an Environmental Assessment** or Scoping Environmental Assessments for actions identified as a Positive Determination.
- 6) Specifically **direct the actions of the implementing partners** in the development of necessary subsidiary environmental compliance documentation, including:
 - a) the Environmental Mitigation and Monitoring Plan (EMMP) for actions assigned a negative determination with conditions (NDwC) in the Supplemental IEE (both new conditions and those reiterated from the Programmatic IEE)
 - b) the development and implementation of the Environmental Review Form/Environmental Review Report (ERF/ERR) for sub-grants and sub-awards. The ERR may be used as the face sheet for the EMMP.

Amendments. This **Programmatic IEE** will be amended where the total ceiling of the RISE II PAD increases, where there is an extension to the length of the project, or a new action is added that applies broadly across numerous award/activity Supplemental IEEs. The Programmatic IEE amendment must proceed through the clearance and approval process by the team, Mission Director, MEO, REO, and the Bureau Environmental Officers (BEOs).

The **Supplemental IEE** must be amended when new actions particular to an award/activity are to be implemented, to rectify a deferral, or to increase the ceiling cost or performance period of the activity. If a deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related actions may be implemented. Supplemental IEE amendments must proceed through the clearance and approval process by the team, Mission Director, MEO, REO, and the BEO(s).

Responsibilities for Programmatic IEE amendment. Responsibility for amending this Programmatic IEE lies with the Sahel Regional Office (SRO) MEO and the SRO REO with input from the affected award/activity teams.

Responsibility for development of the **Supplemental IEEs** lies with the award/activity teams, with development to be undertaken when the detailed information of the actions are available, but the Supplemental IEE must be cleared not later than at activity approval. Per ADS204.5.1, conditions established by the Supplemental IEE will be incorporated in the award/solicitation language, and where appropriate, the implementing partners (IPs) will be directed to develop their associated trailing documentation, EMMPs or ERF/ERRs, with full clearance, prior to commencing those actions.

1.2 PROJECT OVERVIEW

The Resilience in the Sahel Enhanced II (RISE II) Project builds upon the existing RISE I actions in the Sahel, targeting vulnerable populations in Burkina Faso and Niger to bring them out of poverty along sustainable pathways. RISE I, starting in 2013 and implemented from FY12 to FY20, includes the following activities: Resilience and Economic Growth in the Sahel – Enhanced Resilience (REGIS-ER), Sahel Resilience Learning (SAREL) Project, and Resilience

and Economic Growth in the Sahel – Accelerated Growth (REGIS-AG). Five Food for Peace (FFP) Development Food Assistance Projects (DFAPs) also contributed to RISE results, but are covered under their own separate IEEs. The Joint Planning Cell (JPC) REGIS IEE (2013) provided environmental compliance coverage upon RISE I initiation. In 2014, irrigation actions were added to the project and additional details provided on infrastructure for water harvesting. The JPC IEE was amended for the additional actions under the new office name of the Sahel Regional Office (formerly the Joint Planning Cell). An amendment to extend the combined project IEE was approved in early 2018 to extend the date of expiration of the Sahel JPC (including all RISE I activities) until FY20. Activities being implemented under the JPC IEE will continue to do so until closure.

New development assistance activities under the RISE II PAD, will be subject to the conditions of this Programmatic IEE. Separate FFP investments contributing to RISE II are under the purview of the Bureau for Democracy, Conflict, and Humanitarian Assistance (DCHA) BEO and are covered under a separate Programmatic IEE located at <https://ecd.usaid.gov/repository/pdf/50497.pdf>. FFP IPs will prepare, and USAID will approve, Supplementary IEEs during the first year of implementation. Likewise, RISE II also contributes to some centrally-managed Bureau for Global Health (GH) activities under the purview of the GH BEO. Supplemental IEEs will include information required by any of the applicable GH Programmatic or Global IEEs.

The goal of USAID’s RISE II is to assist chronically vulnerable populations in Burkina Faso and Niger, supported by resilient systems, to effectively manage shocks and stresses and pursue sustainable pathways out of poverty. The activities supporting this goal will all incorporate cross-cutting issues of gender, youth, risk management, and governance.

The RISE II goal statement reflects USAID’s key priorities – that vulnerable populations need to be the actors in their own development, that supportive systems (social, ecologic, economic, and governmental) are essential to their success, that shocks and stressors are central contextual factors that must be explicitly addressed, and that our success will be measured by the extent to which these communities are able to sustainably progress to a higher level of well-being.

The RISE II goal is transformational, seeking to enhance individual, household, community, and institutional capacities that can sustain and continue to grow improvements in well-being in the face of a dynamic context of challenges and opportunities. These transformational aspects are embodied in the following RISE II transformative development outcomes to which all activities will contribute:

- Enhanced community leadership of local development
- Enhanced social capital through strengthened ties of mutual assistance among people
- Enhanced capacity to learn and adapt among beneficiaries, local partners, and partner governments

1.3 PROJECT DESCRIPTION

Specific activities have not yet been designed under the project, and to some extent, the organizations implementing the project will help shape the specific actions that comprise those activities. The RISE II results framework encompasses the following:

Objective 1: Enhance social and ecological risk management systems.

IR1.1 Improved water security

- 1.1.1 Enhanced watersheds and water resources management for productive uses
- 1.1.2 Improved water management for productive uses
- 1.1.3 Enhanced access and management of safe drinking water

IR1.2 Enhanced sustainable productive land use

- 1.2.1 More equitable, secure access to land
- 1.2.2 Improved management of natural resource conflicts
- 1.2.3 Enhanced climate smart agricultural practices
- 1.2.3 Improved pasture management and restored land

IR1.3 Improved management of shocks, risks, and stresses

- 1.3.1 Enhanced preparedness
- 1.3.2 Improved early response
- 1.3.3 Strengthened recovery capacity
- 1.3.4 Enhanced social capital
- 1.3.5 More response relationships between local and national levels

Objective 2: Increase and sustain economic well-being.

IR2.1 Improved agricultural and pastoral livelihoods

- 2.1.1 Greater agricultural and livestock productivity
- 2.1.2 Improved access to inputs and services
- 2.1.3 Improved post-harvest practices
- 2.1.4 Increased employment in value chains and supportive markets

IR2.2 Diversified economic opportunities

- 2.2.1 Enhanced asset ownership for women and youth
- 2.2.2 Improved personal business networks
- 2.2.3 Migration benefits to local communities

IR2.3 More inclusive and resilient market systems

- 2.3.1 Enhanced business enabling environment
- 2.3.2 Improved access to market information
- 2.3.3 Improved infrastructure
- 2.3.4 Enhanced market organization
- 2.3.5 Increased capacity of producer organizations and businesses

IR2.4 Increased utilization of financial services

- 2.4.1 Enhanced informal financial services
- 2.4.2 Enhanced formal financial services
- 2.4.3 Improved access to quality insurance
- 2.4.4 Increased investment and value chain financing

IR2.5 Improved human capacity, especially for women and youth

- 2.5.1 Greater literacy and numeracy
- 2.5.2 Improved financial management skills

- 2.5.3 Enhanced vocational and life skills
- 2.5.4 Increased leadership capacity of women and youth

Objective 3: Improve health, family planning, and nutrition outcomes.

- IR3.1 Strengthened health systems
 - 3.1.1 Improved leadership, management and human resources
 - 3.1.2 Improved supply chain management
 - 3.1.3 Stronger health information systems
 - 3.1.4 Enhanced policy, financing, and governance
- IR3.2 Increased supply of quality health, family planning, and nutrition services
 - 3.2.1 Greater access to quality services, including for youth
 - 3.2.2 Strengthened linkages between community and facility platforms
- IR3.3 Improved health, family planning, hygiene, and nutritional practices
 - 3.3.1 Reduced barriers to adoption of priority behaviors
 - 3.3.2 Improved capacity to implement social and behavior change programs
- IR3.4 Increased access to affordable, nutritious, safe foods
 - 3.4.1 Enhanced local production of nutritious, safe food
 - 3.4.2 Increased market availability of nutritious, safe food
 - 3.4.3 Enhanced purchasing power
 - 3.4.4 Improved food access through safety nets

Objective 4: Enhanced governance of institutions and organizations.

- IR4.1 Improved performance of sub-national state institutions (village, commune, province, region)
 - 4.1.1 Improved resource mobilization and coordination
 - 4.1.2 Enhanced capability
 - 4.1.3 Greater transparency and accountability
 - 4.1.4 Enhanced women's and youth leadership
- IR4.2 Strengthened local civil society and community-based organizations
 - 4.2.1 More inclusive civic participation in local government structures
 - 4.2.2 Enhanced capability
 - 4.2.3 Greater transparency and accountability
 - 4.2.4 Enhanced women's and youth leadership
- IR4.3 Improved functioning of national resilience institutions
 - 4.3.1 Strengthen national resilience policies
 - 4.3.2 Improved coordination and implementation
 - 4.3.3 Strengthened monitoring, evaluation, and learning systems
- IR4.4 Improved capability of regional institutions (USAID/West Africa)

Objective 5 Enhance social, economic and political agency of women and youth.

For the purpose of streamlining review in this Programmatic IEE, actions are assigned to intervention categories based on their target sector categories. Only those categories with potential direct physical environmental impact or foreseeable indirect environmental impact are included in the categories below Table 2. Those actions which qualify for Categorical Exclusion

per 22 CFR² §216.2(c)(2) are identified separately in accordance with their defined Categorical Exclusions. Social impacts are identified separately in Section 3.5 and indicated separately under conditions for each action.

TABLE 2. INTERVENTION CATEGORIES AND SUMMARIZED CONTENTS

Intervention Category A — Natural Resource Management (NRM) and Mixed NRM
Agroforestry, including crop and fodder production and forest products
Farmer-managed natural regeneration (FMNR) and community-based natural resource management (CBNRM)
Natural products value chains
Fencing – natural
Plantings and forestry, including buffers, wind blocks, and nurseries
Soil and water conservation, including infiltration structures and erosion control
NRM infrastructure, including groundwater recharge structures, flood control, and storm water management
Composting
Watershed protection and exclusion zones
Land and water management planning and community engagement
Intervention Category B — Rangeland Management and Livestock Production/Management
Fodder and feed production
Livestock production
Veterinary services and education, including vaccination campaigns and promotion of veterinary services
Dairy production and processing
Fire management
Rangeland management including restoration and border fences
Brush clearing and invasive species control
Intervention Category C — Fisheries and Aquaculture
Artisanal and commercial fishing, including direct support, training, planning and management, and enforcement
Fish habitat improvement, including in-stream structures, nurseries, and mangrove restoration
Fishing exclusion zones
Fish stocking and harvesting
Fish and aquaculture products processing
Fish health interventions
Fish processing
Aquaculture management and utilization
Aquaculture pond water sources and impoundment construction or rehabilitation
Water treatment and water amendments for aquaculture
Intervention Category D — Water, Sanitation, and Hygiene (WASH)
Construction, rehabilitation, and promotion of latrines
Construction/rehabilitation of boreholes

² § will stand in for 22 CFR when discussing the 22 CFR 216 regulation and components.

Construction/rehabilitation of hand wash stations and soak pits
Water distribution systems, including piped systems and communal taps
Construction/rehabilitation of impoundments for household use
Distribution infrastructure and distribution systems
Construction of sand dams or subsurface dams
Water purification and treatment
Water protection structures
Intervention Category E — Irrigation and Livestock Watering Points
Construction/rehabilitation of irrigation systems, including water storage, conveyance, lifting and management
Livestock watering points and irrigation supply ponds
Distribution infrastructure
Intervention Category F — Business Development and Finance
Private sector investment in groundwater, livestock value chains, post-harvest techniques
Support for improved access to inputs by the private sector
Financial support
Livelihood diversification through cash grants and education
Development credit authority (DCAs)
Intervention Category G — Infrastructure and Construction
General construction/rehabilitation
Warehouses, market infrastructure, and storage facilities
Animal pens and housing
Roads
Intervention Category H — Health
Health care worker training
Support for health facility operation and systems strengthening
Education on food storage and preparation
Pharmaceutical supply chain management and stock-outs
Intervention Category I — Agriculture
Agricultural value chain support, including linkages, finance, credit and association strengthening
Agricultural policy
Agricultural production inclusive of capacity building, demonstration, assistance, research
Home gardens
Training, implementation, and strengthening of agricultural practices and technologies, including cover crops and no-tillage
Fruit tree production
Genetically engineered (GE) organisms
Seeds, seedlings, nurseries, and improved varieties
Soil enrichment and amendment, including nitrogen-fixing bacteria such as <i>Rhizobium</i> spp.
Inputs – fertilizer, pesticides, agricultural tools
Integrated pest management (IPM), including aflasafe TM in aflatoxin mitigation
Protective equipment
Post-harvest storage practices, including training, research, demonstration, use of storage bags, collectives, and other techniques

1.4 GRANDFATHERED ACTIVITIES

Because of the integrated design of the RISE II PAD, there are activities which are funded under the RISE I PAD directly by SRO, through field-mechanism buy-ins, or funded and managed through central mechanisms by pillar bureaus. Activities which were awarded and are being implemented under the previous or existing IEEs may continue to operate under the conditions of their historical IEE, if the project/activity has an existing EMMP conforming to the conditions of that IEE. Those activities which are new, or currently operating but do not have an existing EMMP, must comply with the conventions of this IEE.

2.0 BASELINE ENVIRONMENTAL INFORMATION

2.1 LOCATIONS AFFECTED AND ENVIRONMENTAL CONTEXT

2.1.1 LOCATIONS AFFECTED

Burkina Faso and Niger are the RISE II focus countries. Located in the arid Sahel, Burkina Faso and Niger are both landlocked countries in Western Africa. Burkina Faso is located South of the Sahara Desert. Named after the Niger River, Niger is mostly covered by the Sahara Desert. The countries share a 622-km border along the southeastern edge of Niger and the northwestern edge of Burkina Faso. Burkina Faso has a land area totaling 274,200 sq km with Niger's land area being much larger, a total land area of 1.267 million sq km, which makes Niger the 23rd largest country in the world.

The operational zone for RISE II will be similar to the previous RISE I project; however, the target zone will be contracted to focus on a smaller area to maximize impact. In Niger, the zone of influence encompasses the Maradi region and the entire Zinder region except the northernmost desert communes. In Burkina Faso, the zone of influence is a selected group of communes of the northern Centre Nord region. However, USAID anticipates investing in livelihoods and governance activities in insecure zones such as Tillabéri and Sahel under the umbrella of preventing and countering violent extremism. Further, RISE II activities will be designed to be flexible and allow adjustments to implementation modalities and/or geography in response to changing situations on the ground, U.S. Government priorities, resource availability, and other challenges or opportunities. Activities will be focused on rural areas, but investment in urban and peri-urban areas is also expected since linking them to rural markets is critical to ensuring rural prosperity as well.

2.1.2 CLIMATE

Further details on climate threats are provided in Section 4.2 as part of the climate risk screening process. General climate characteristics are discussed here.

As noted in the **Burkina Faso** Climate Risk Profile³, the Centre-Nord area of Burkina Faso is a semi-arid climate with 50-70 rainy days a year, most falling during a two-month rainy season in the north from June/July to August (See Figure 1 for rainfall estimates). Dry season is dominated by the Harmattan trade winds which reduce humidity and contribute to reduced air quality and eroded soils. Temperatures in the north can vary dramatically between 15-45 degrees C.

Crop production, and therefore food security, and water availability are highly vulnerable to climate change in **Burkina Faso**. Environmental factors such as degraded systems, poor soils, lack of vegetative cover, and high evaporation rates are confounding factors exacerbating climate threats and contributing to vulnerability. While improving natural resources or “regreening” efforts have been implemented to adapt to climate change, these interventions face similar challenges as traditional agriculture because of extreme weather events and trends toward a drier and hotter climate (e.g., limited water availability during seedling establishment, wind erosion, heat waves, etc.).

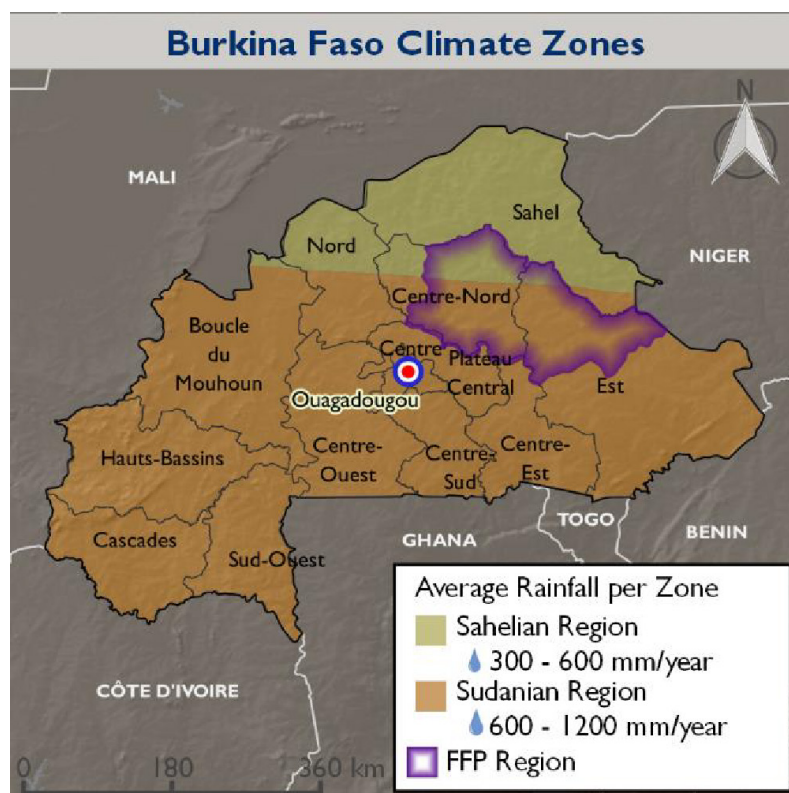


FIGURE 1. BURKINA FASO POLITICAL AND CLIMATE MAP

³https://www.climatelinks.org/sites/default/files/asset/document/20170807_USAID%20ATLAS_FFP_BurkinaFaso.pdf

Niger's Climate Risk Profile summarizes climate vulnerabilities and risks to USAID food security programs but can more broadly applied to the RISE II zone of influence.⁴ Niger is one of the hottest countries in the world and has three basic climatic zones: the Saharan desert in the north, the Sahel to the south of the desert, and the Sudan in the southwest corner (See climate zones in Figure 2). The dry season is November through May with a short rainy season in August. The intense heat of the Saharan zone often causes the scant rainfall to evaporate before it hits the ground.⁵ The Harmattan winds blow from the northeast and cause dust storms from November to March. Temperatures in the south average 30 degrees C.

Only one-fifth of the total land mass is savanna in Niger and is suitable for livestock or limited agriculture. As a result, the populace is concentrated in the far south along the borders with Nigeria and Benin. Crop production is primarily rainfed so erratic rainfall and decreased rainfall affects production. Additionally, high winds can erode topsoil, reducing overall fertility, and causing damage or stress to vegetation during storm events. These climate threats also affect the livestock/pastoralist sector. Rangeland can be degraded by high winds and low rainfall. Areas that are still producing fodder during dry periods also may be overgrazed and degraded due to overuse. Conflicts may arise over access rights.

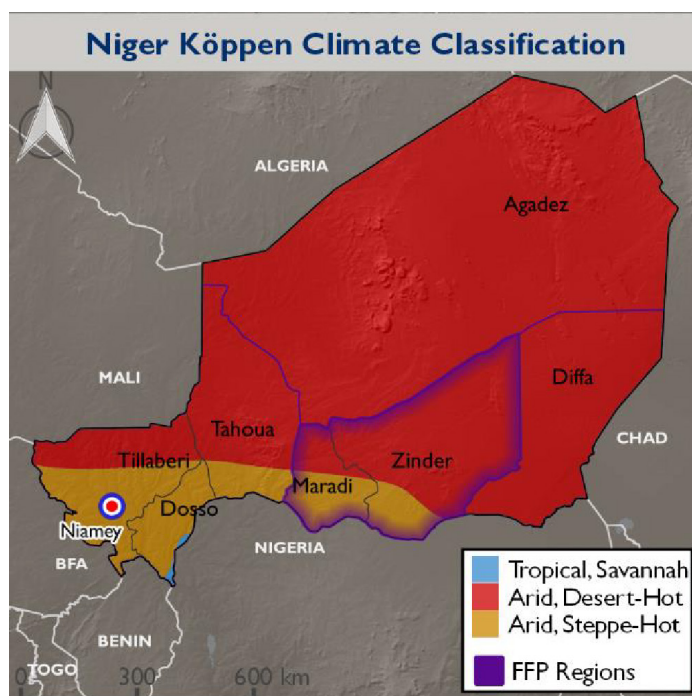


FIGURE 2. NIGER POLITICAL AND CLIMATE MAP

The most important climate event of the last century in the Sahel was the “great drought” of the early 1970s, and its successors in the mid-1980s. The great drought was transformative, drying up water bodies and drastically reducing vegetative cover over vast areas. While the area has

⁴https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20ATLAS_Climate%20Risks%20in%20Food%20for%20Peace%20Geographies%20Niger.pdf

⁵ <http://www.nationsencyclopedia.com/Africa/Niger-CLIMATE.html>

received an increase in total rainfall since the 1990s, the 21st century has seen the return of a series of droughts and severe food insecurity in 2005, 2010, and 2012. Researchers also have noted what they characterize as changes in seasonal patterns (late arrival and early cessation of rains) and intense rain events. There is not a strong consensus about future rainfall in the Sahel, but scientists have recently suggested the likelihood of a somewhat wetter Sahel, with more variable precipitation on all time scales, from intra-seasonal to multi-decadal, and projected increases in daily rainfall intensity rather than frequency. There is a strong consensus that increases in Sahelian temperatures will continue.⁶

2.1.3 AGRICULTURE

Both Burkina Faso and Niger rely heavily on subsistence farming. A lack of natural resources and a weak industrial base make achieving increased agricultural production a challenge. Agricultural productivity is affected by environmental threats such as desertification, overgrazing, soil erosion, and deforestation. In Burkina Faso, about 90 percent of the workforce relies on subsistence farming, and in Niger, about 87 percent. A significant portion of the labor force seeks migratory seasonal employment. Persistent human trafficking forces children into farm labor, and despite some moderate advancement in efforts to eliminate the worst forms of child labor, children in these countries continue to be used for arduous agricultural labor.

Burkina Faso is positioned at 185 out of 188 countries and territories in Human Development Index as of 2015. Some of the main causes of poverty in Burkina Faso continue to be a lack of resilience and modernization in the agricultural sector, an unmanaged rural exodus to urban areas and a growing population size. The country's most important export commodity, cotton, has been subject to fluctuating prices in recent years.⁷

In 2017, an estimated 32 percent of gross domestic product (GDP) of **Burkina Faso** was attributed to agriculture. About 43 percent of the land is used for agricultural purposes; however, only 22 percent is considered arable, 0.3 percent is permanent crops, and 22 percent is permanent pasture. As of 2012, an estimated 550 sq km of land is estimated to be irrigated.⁸ Soils in Burkina Faso are mostly Alfisols with a near neutral pH but low organic matter content. Cotton is the most common cash crop, but other important agricultural value chains include peanuts, shea nuts, sesame, sorghum, millet, corn, rice, and livestock.

In 2016, the United Nations ranked **Niger** as the least developed country in the world (#187). Food insecurity and a lack of prospects for work beyond subsistence farming and herding are challenges for the country in addition to high population growth, and a weak educational sector. The total labor force is estimated to be around 6.5 million.

Niger's agricultural sector represents about 43 percent of GDP. An estimated 35 percent of total land is used for agricultural purposes, but about 12 percent is arable land, 0.1 percent permanent crops, and 23 percent is permanent pasture. As of 2012, roughly 1000 sq km of land is estimated to be under irrigation. Crops in Niger are extremely vulnerable to water and wind

⁶ http://www.fess-global.org/Publications/Other/FESS%20Sahel_Case_Study.pdf

⁷ <http://www.borgenmagazine.com/causes-of-poverty-in-burkina-faso/>

⁸ <https://www.cia.gov/library/publications/the-world-factbook/geos/uv.html>

erosion. Agricultural crops grown in Niger include cowpeas, cotton, peanuts, millet, sorghum and cassava and sugarcane and tobacco with important exports being onions, beans and vegetables and rice.

2.1.4 LIVESTOCK, RANGELAND MANAGEMENT, AND POULTRY

Pastoralism has traditionally been a way of life for a large portion of the population in the Sahel region. These traditional communities, who must be adaptable to the needs of their livestock, have a lifestyle that is increasingly under pressure between the nomad and sedentary populations engaged in livestock raising. In years with typical rainfall, rapid demographic change, continual extension of agriculture to new lands, environmental degradation, and new forms of commercial activities—are configuring new situations of competition over resources that increase the potential for conflict.⁹ With erratic climatic conditions, particularly during droughts, pastoralists seek pasture and water as an adaptation strategy, focusing the environment impact of livestock production on smaller areas, leading to overgrazing and damage to water sources as well as potentially contributing to conflict over resources.

Burkina Faso livestock is almost totally in the hands of the poor pastoralists and smallholder farmers who are amongst the poorest of the society. Around 10 percent of the population is part of a nomadic group, either Fulani (8.4 percent) or Tuareg (1.9 percent). Livestock loss tends to be high in years of drought where households lose at least 12 percent of household income due to livestock deaths.

With so much of **Niger's** land unsuitable for crops, there is a particularly heavy dependence on livestock, which accounts for around 15 percent of GDP and supports 29 percent of the population. The majority of the livestock; camels, cattle, sheep, and goats, are held by pastoral nomads, the Tuareg (11 percent of the population) and the Fulani (6.5 percent of the population), who use range across the savannahs and into neighboring countries. Niger relies on its livestock sector for income and food security, the main market being its neighbor, Nigeria. As Nigeria's population continues to grow, demand for meat is also increasing - an opportunity for further development in Niger's livestock industry.¹⁰

Poultry is an important agricultural industry in **Burkina Faso**, with 1,400,000 tons of meat and 6,000 tons of eggs per year. Per capita, 8 kg of poultry meat is consumed per year.¹¹ There are four poultry subsystems in Burkina Faso, typically depending on the region, from extensive (free-range and semi-free range) to the intensive level (semi-intensive and intensive). Extensive systems, ranging between 5-50 animals, comprise 98 percent of the flock in the country. Both Guinea fowl and chickens are common. Intensive systems, similar to modern broiler and layer farms, makes up only 2 percent of the meat and 14 percent of the egg production. Intensive operations are typically those with formal infrastructure, feeding and animal health systems.

⁹ https://www.climatelinks.org/sites/default/files/asset/document/Sahel_Case_Study.pdf

¹⁰ <http://www.new-ag.info/en/country/profile.php?a=857>

¹¹ FAO. 2018. Africa Sustainable Livestock 2050: Livestock production systems spotlight, Burkina Faso. Available at: <http://www.fao.org/3/i8492en/I8492EN.pdf>

Niger consumes 99 percent of the poultry it produces, with chickens accounting for 58 percent of the poultry and the rest being local varieties of poultry. In Niger, chicken meat consumption is lower than in Burkina Faso or other parts of West Africa at 1.5 kg per capita per year (5.1 kg for West Africa on average).¹² Systems tend to be extensive free-range systems with low inputs and potentially some water and low grade grain supplements in the dry season. Guinea fowl eggs are an important resource during the rainy season. Intensive operations comprise 3 percent of the poultry flock, with four main state-owned centers. These operations serve as large-scale day old chick providers to facilitate development of the poultry industry in the private sector.

2.1.5 STATUS OF NATURAL RESOURCES

In 2017, USAID conducted Conservation of Tropical Forests and Biodiversity assessments for Burkina Faso and Niger in accordance with Sections 118 and 119 of the Federal Assistance Act (FAA) of 1961 as amended. Burkina Faso and Niger have diverse forest and wildlife resources, although environmental pressure and human activity (e.g., poaching and habitat destruction) have put some of these critical natural resources in jeopardy.^{13, 14, 15, 16} Habitat loss due to the growth of agriculture is the primary driver of biodiversity loss. Although it should be noted that one implication is that agricultural intensification, implemented in an environmentally sensitive manner, has the potential to reduce threats to wild species by diversifying and increasing income.

Burkina Faso had 5.35 million hectares of forests and 4.80 million ha of other wooded lands in 2015, which represented 19.6 percent and 17.5 percent of the country's area respectively.¹⁷ The vast majority (93.44 percent) of Burkina Faso's forests are the property of the state and administered by the government; 5.8 percent are public lands reserved for indigenous groups and communities; and the remaining forests are held by private individuals or companies.¹⁸ Ninety six percent of all forests are naturally regenerated and 4 percent are planted. There are no primary forests left in the country¹⁹ and planted forests have expanded at a rate of 7.9 percent per year from 2010 to 2015, when they reached 239,000 ha.²⁰ However, while planted

¹² Schneider K., Gugerty M., and Plotnick R. 2010. Poultry market in West Africa: Niger. Available at: https://evans.uw.edu/sites/default/files/public/Evans%20UW_Request%2089_Poultry%20Market%20Analysis%20Niger_June-14-2010.pdf.

¹³ <https://www.cia.gov/library/publications/the-world-factbook/geos/uv.html>

¹⁴ <https://www.cia.gov/library/publications/the-world-factbook/geos/ng.html>

¹⁵ <https://www.cia.gov/library/publications/the-world-factbook/geos/ng.html>

¹⁶ <https://www.cia.gov/library/publications/the-world-factbook/geos/uv.html>

¹⁷ Food and Agricultural Organization (FAO), 2015. *Global Forest Resources Assessment 2015: Desk Reference*, Rome. Available at: <http://www.fao.org/3/a-i4808e.pdf>

¹⁸ Global Forest Watch (GFW), 2013. Global Forest Watch System Status. *Hansen/UMD/Google/USGS/NASA Tree Cover and Tree cover Loss and Gain, Country Profile*. Available at: <http://www.globalforestwatch.org/countries>

¹⁹ GFW, 2013

²⁰ FAO, 2015

forests have expanded, forest loss in natural and protected areas has continued, with 59.8 thousand ha per year, or a 1.1 percent yearly reduction.²¹

In 2015, **Niger** had 1.14 million ha of forests and 3.14 million ha of other wooded lands, which represent 0.9 percent and 2.5 percent of the country area, respectively.²² The state owns and administers 82.44 percent of all national forests, while 17.37 percent are public lands reserved for the use of indigenous groups and communities, and the remaining forests are held by private individuals or companies.²³ Naturally regenerated forests account for 68 percent of country's forests, whereas 19 percent are primary forests, and 13 percent are planted forests. There has been no reduction of forest cover within protected areas, but the country has lost on average 12,400 ha of forests per year between 2010 and 2015, a 1.1 percent yearly reduction. In 2011, deforestation was responsible for 3.4 percent of the nation's greenhouse gas (GHG) emissions.²⁴

Regreening has been a major focus of donors, government, and non-governmental organizations (NGOs). Hundreds of thousands of farmers in **Burkina Faso and Niger** have utilized agroforestry, water, and soil-management practices to rehabilitate arid lands into agricultural areas and increase tree cover. Farmers have used zai pits, demi-lunes, and contour planting along natural contours to capture rainwater, recharge aquifers and improve overall soil moisture. Tree plantings and multiplication have also been used by farmers in their fields, also resulting in some success. The efforts in Burkina Faso have rehabilitated 200,000 to 300,000 ha of land, resulting in 80,000 tons of food annually. Farmers in Niger have improved about 5 million ha of land and resulted in 500,000 additional tons of food annually.²⁵ The landscape of southern Niger has transformed considerably over the past 30 years and is an unprecedented success story. Local farmers' practices and expert knowledge of the landscape were copied and enhanced in low-cost ways to replicate their success throughout the country and the entire Sahel region.

2.1.6 STATUS OF WATER INFRASTRUCTURE

Burkina Faso and Niger both have limited water resources with barriers both to access and availability of water. Rapid urbanization has placed pressure on water resources and climate change may pose additional challenges as variable rainfall is expected to contribute to intensified droughts and floods.

The longest river in **Burkina Faso** is the Black Volta (1,352 km/840 miles), located in the southwestern bulge of the country. The two other principal rivers, the White Volta and Red Volta, run north to south in the central plateau region. Burkina Faso has very few permanent natural lakes.²⁶ Although water access has improved significantly over the past decade, improvements are still needed in many areas. An estimated 72 to 82 percent of the population

²¹ Niger Tropical Forest and Biodiversity (FAA 118/119) Assessment (2017)

²² FAO, 2015

²³ GFW, 2013

²⁴ FAO, 2015

²⁵ <https://pubs.er.usgs.gov/publication/70157359>

²⁶ <http://www.nationsencyclopedia.com/geography/Afghanistan-to-Comoros/Burkina-Faso.html>

has access to adequate water resources, though rural areas lag far behind urban areas in terms of access. Despite dramatic improvements in water access, adequate access to sanitation is still very low. As of 2016, only an estimated 20 percent of the population has adequate sanitation facilities.^{27, 28, 29}

Farmers in **Burkina Faso** are moving away from collective irrigation schemes towards individually-managed irrigation installations. Gravity-fed community schemes focus on the production of staple crops and tend to be inefficient and management-demanding. Conversely, small private irrigation saves water and is on-demand, so can be applied to high-value crops (vegetables mostly). These systems coexist and complement one another.³⁰ Most systems in Burkina Faso are surface irrigation systems, though sprinkler irrigation is favored for cultivation of certain crops, such as sugarcane. Other irrigated crops with recommended rotations on irrigated areas include rice, maize, and cowpeas. Irrigated crops contribute significantly to food security in Burkina Faso. Cultivation of irrigated crops also offers economic opportunities to vulnerable populations including women, though women represented only 10 percent of the members of irrigators' communities in 2011.

The Niger River flows through the south west corner of **Niger** and there are extensive fossil groundwater resources. But the river can dry up completely at Niamey, and most aquifers are deeply buried and non-renewable. In the northeast, Niger shares Lake Chad with Nigeria, Chad and Cameroon. The size of Lake Chad greatly varies seasonally with the flooding of the wetlands areas.

The most recent data suggests that in **Niger**, 58 to 62 percent of the population has access to water sources.³¹ Around 41 percent of the population has access to sanitation facilities and about 11 percent has access to improved facilities. An estimated 63 million people do not have access to improved drinking water sources and 100 million people lack access to basic sanitation facilities. While people in urban areas have access to water, people often purchase water from vendors and carry it long distances in containers. In rural areas, only about 42 percent of households have access to improved water sources.³² Some World Bank sources suggest that private water companies lack incentives to modernize rural water systems.³³ Other sources have found that even when new water systems are installed, as many as 30 percent fail

²⁷ <http://www.worldbank.org/en/results/2017/07/28/burkina-faso-developing-infrastructure-and-an-enabling-environment-for-sustained-access-to-water-and-sanitation-services-for-the-urban-poor> (Reported rate of total improved water source use: 72 percent in 2016)

²⁸ https://www.unicef.org/infobycountry/burkinafaso_statistics.html (Reported rate of total improved water source use: 80 percent in 2011)

²⁹ <https://www.cia.gov/library/publications/the-world-factbook/geos/ng.html> (Reported rate of total improved water source use: 82 percent in 2015)

³⁰ <http://awm-solutions.iwmi.org/burkina-faso-solutions.aspx>

³¹ <https://www.cia.gov/library/publications/the-world-factbook/geos/ng.html>

³² http://www.who.int/water_sanitation_health/monitoring/investments/nigeria-10-nov.pdf (67 percent access to water supply, estimated 62 percent access to improved, 41 percent access to sanitation facilities as of 2013)

³³ <http://blogs.worldbank.org/water/delivering-water-and-sanitation-services-niger-challenges-and-results>

within the first year. In rural areas 61 percent of the population lives more than 30 minutes away from a functioning water source and 34 percent live more than 2 hours away.³⁴

Irrigation in **Niger** is practicable only along the water courses,³⁵ making affordable and efficient irrigation systems an area of interest for investment. The renewable water resources that may be available for improved irrigation systems include 31 billion m³ of surface water and 2.5 billion m³ of groundwater.³⁶ The Millennium Challenge Corporation Niger Compact will invest a portion of \$254 million into access to water for agriculture and livestock.³⁷ In 2013, the estimated cost of developing new lands with total water control was \$30,000/ha and the cost of physical rehabilitation was estimated at \$8,000/ha.³⁸ The estimated cost for smaller scale irrigation projects is much lower, at \$8,000/ha for new systems. Operating costs for these lands may vary based on the type of irrigation system. Estimates ranged from \$30/ha in gravity systems in the Tahoua region to \$120-240/ha for surface irrigation systems that require pumping water near the Niger River. The totally controlled water areas monitored by the National des Amenagements Hydro-Agricoles have demonstrated positive results including increased cultivation of rice, a major agricultural staple.

2.1.7 NATURAL DISASTERS AND RESPONSE SYSTEMS

Both Burkina Faso and Niger are part of the Climate Risk and Early Warning Systems (CREWS). CREWS is an initiative by the Global Facility for Disaster Reduction and Recovery (GFDRR) to finance weather stations, radar facilities, and early warning systems in poor and vulnerable countries where weather data is unreliable or lacking. GFDRR is a global partnership that helps developing countries better understand and reduce their vulnerability to natural hazards and climate change. In Burkina Faso, CREWS supports capacity-building for hydro-meteorological services that serve as early warning systems and contribute to risk-reduction with a focus on flood-risks and agricultural and food security. This capacity-building is directed towards the National Meteorological Service and creating strong partnerships between ministries and stakeholders.³⁹ In Niger, CREWS is working to strengthen early warning systems for floods along the Niger and Komadougou Rivers and improve early warning systems for famine.⁴⁰

The most common natural disasters in **Burkina Faso** are drought and concurrent famine. In the 1970s, droughts caused famines and resulted in high mortality and depleted livestock. Since then, droughts have been less severe and responses from the government and international aid organizations have prevented high fatality rates but drought and famine are a persistent threat. Desertification and climate change also present challenges to water resources. The expanding

³⁴ <http://blogs.worldbank.org/water/water-key-poverty-reduction-and-health>

³⁵ <http://documents.worldbank.org/curated/en/821031468758341721/pdf/multi-page.pdf>

³⁶ https://www.climateinvestmentfunds.org/sites/default/files/IFC%20PPCR_Niger%20Program%20Proposal_PUBLIC_May%202014.pdf

³⁷ <https://www.mcc.gov/where-we-work/program/niger-compact>

³⁸ http://www.fao.org/nr/water/aquastat/countries_regions/NER/index.stm

³⁹ <https://www.crews-initiative.org/en/projects/burkina-faso-strengthening-national-capacities-early-warning-system-service-delivery>

⁴⁰ <http://www.crews-initiative.org/fr/projects/niger-strengthening-early-warning-services>

desert degrades the quality of soil and water resources, while higher temperatures evaporate more water from reservoirs and dams, all affecting agricultural production. Human activities such as overgrazing and intensive farming may also exacerbate the threat of drought and famine. Sandstorms and flooding also occur in certain parts of the country. In August 2006 for example, the Oudalan province experienced unusually heavy rains and flooding which resulted in widespread property damage.⁴¹

Niger experiences a very similar set of natural disasters. Drought and famine occur persistently. In 2017, an estimated 1.5 million people were affected by food insecurity and an additional 1.5 million were estimated to be chronically food insecure. Inadequate food production and rapid population growth have led to 20 percent of the population being unable to meet their food needs and 30 percent being unable to meet their needs when rainfall is poor.⁴² In addition to natural disasters, violence by Boko Haram in Nigeria has spread into Niger and resulted in displaced populations and additional food security.⁴³ Flooding is also common in Niger. More than 50 people died in floods in 2017. Improvements in early warning systems for floods include partnerships between the Ministry for Humanitarian Action and Disaster Management, the National Meteorological Service, the National Mechanism for Food Crisis Management, the Civil Protection Directorate, the National Hydrology Service, and the World Meteorological Organization-World Bank mission. Strategies include identifying flood-prone areas along the rivers, improving risk-mitigation infrastructure, and identifying vulnerable populations.⁴⁴

2.1.8 POPULATION HEALTH AND EDUCATION

Burkina Faso and Niger populations are both growing rapidly. As of 2017, Burkina Faso has an estimated 3 percent population growth rate while Niger has an estimated 3.2 percent growth rate. Population growth combined with weak health infrastructure, persistent food insecurity, and a lack of access to essential services creates a series of public health challenges. In addition, there is a notable lack of educational and economic opportunities. Rural areas lag behind urban areas in terms of health and educational outcomes and there is a significant gender disparity across both urban and rural areas. Adult literacy rates in Niger are estimated to be between 19 and 29 percent while literacy rates in Burkina Faso are estimated to be between 29 and 36 percent. Average life expectancy in both countries is 56 years.

Burkina Faso has a total fertility rate of almost 6 children per woman and more than 65 percent of the population is under 25. Cultural norms favor education and employment for boys and men and contribute to a lack of opportunities for girls and women. An estimated 52 percent of girls are married by age 18.⁴⁵ The maternal mortality rate is 371/100,000 live births and the rate of contraception use is only 26 percent as of 2016. As of 2012, an estimated 33 percent of children

⁴¹ <http://www.un.org/africarenewal/magazine/july-2007/coping-less-rain-burkina-faso>

⁴² <http://www1.wfp.org/countries/niger>

⁴³ [https://docs.wfp.org/api/documents/WFP-](https://docs.wfp.org/api/documents/WFP-0000016302/download/?_ga=2.211866644.1459596640.1518199153-304593260.1518199153)

[0000016302/download/?_ga=2.211866644.1459596640.1518199153-304593260.1518199153](https://docs.wfp.org/api/documents/WFP-0000016302/download/?_ga=2.211866644.1459596640.1518199153-304593260.1518199153)

⁴⁴ <https://public.wmo.int/en/media/news/niger-making-progress-towards-flood-early-warning-system>

⁴⁵ <https://www.girlsnotbrides.org/child-marriage/burkina-faso/>

were stunted while 24 percent of children were underweight and 6 percent were severely underweight.^{46, 47}

Niger has the highest total fertility rate in the world, with an average of about 7 children per woman and nearly 70 percent of the population is under 25. The maternal mortality rate is 553/100,000 live births. A combination of gender inequality and cultural norms, including the desirability of large families, contributes to the very high fertility rate. The lack of educational and economic opportunity for women leads to early marriage and a young average age for first pregnancy. Niger has the world's highest rate of child brides with an estimated 76 percent of girls married by age 18.⁴⁸ In addition, contraception is not widely used. The estimated rate of use for any type of contraceptive is only 17 percent as of 2016. The rapid population growth in Niger has outstripped agricultural production and persistent poverty and climate change have exacerbated the situation. As of 2012, an estimated 44 percent of children were stunted while 36 percent were underweight and 13 percent were severely underweight.^{49, 50}

2.2 ENVIRONMENTAL AND SOCIAL LAWS, POLICIES, AND REGULATIONS

2.2.1 SUB-SAHARAN AFRICA ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCEDURES⁵¹

According to the Legal and Regulatory Framework Study of the World Bank, environmental impact assessment (EIA) is a procedure for evaluating the impact proposed activities may have on the environment. In recent years, significant strides have been made to build a legal foundation for EIAs in Sub-Saharan Africa. Whereas EIAs were typically carried out only to meet requirements of foreign donors, they are now mandated in twenty-two Sub-Saharan countries as an important element of domestic environmental law, and policy. Activities for Burkina Faso and Niger are expected to understand and document their compliance with local EIA regulations.

2.2.2 BURKINA FASO REGULATORY STRUCTURE

Constitution and Regulations.⁵² Burkina Faso's constitutional, legislative and regulatory frameworks address environmental protection and natural resources management. The constitution approved on June 2, 1991, accords a special importance to and includes a number of provisions for the protection and management of the environment:

⁴⁶ https://www.unicef.org/infobycountry/burkinafaso_statistics.html

⁴⁷ <https://www.cia.gov/library/publications/the-world-factbook/geos/uv.html>

⁴⁸ <https://www.girlsnotbrides.org/child-marriage/niger/>

⁴⁹ https://www.unicef.org/infobycountry/niger_statistics.html

⁵⁰ <https://www.cia.gov/library/publications/the-world-factbook/geos/ng.html>

⁵¹ Excerpts from DCHA BEO FY18 RFA Burkina Faso, Niger IEE. 2018.

https://ecd.usaid.gov/document.php?doc_id=50497

⁵² 2017 USAID ASTER IEE on Burkina Faso. <http://gemini.info.usaid.gov/repository/pdf/50407.pdf>

Article 14 of the constitution asserts that the natural wealth and resources belong to the people. *Article 29* recognizes the right to a healthy environment and states that the protection, defense and promotion of the environment are a shared duty.

Article 101 defines legal authority and responsibility of the state towards protection of the environment. The Environmental Code (Act No. 05/97/ADP of 30 January 1997) sets out basic principles to preserve the environment and improve the quality of life in Burkina Faso. It defines what are considered to be pollution-causing actions, pollution control and provides penalties for violators.

Burkina Faso's 2007 national environmental policy, *Politique Nationale en Matière d'environnement*, is the main strategic policy framework. It sets out the national framework and plans for the sustainable management of natural resources and the environment. It has not yet been operationalized, but the government plans to do so in conjunction with several other recently developed key programs and policies.

In 2008, the government signed a decree (No. 2008-125/PRES/PM/MECV) specifying the creation and organization of environmental units that would be placed within the various ministerial departments and government enterprises as a way to ensure that environmental concerns are integrated into plans, policies and actions at different levels of government.

Oversight Bodies. The Ministry of Environment is the principal government department in charge of the design, coordination and implementation of national environmental policy. The ministry is responsible for promotion and coordination of actions to combat desertification; protection of forests and wildlife; promotion of environmental assessments and environmental education, compliance with environmental conventions, and pollution prevention and control. The Ministry of Environment, the Ministry of Agriculture, and the Ministry of Water & Water Resources are responsible for the implementation and enforcement of legal provisions that apply to land, forestry, wildlife, fishery, water, agricultural and livestock systems. Measures, in addition to the Environment Code, that directly apply to environmental conservation include Agrarian and Land Reform, Forestry Code, Mining Code, Water Code, and traditional and customary regulations (traditional hunting and fishing, sacred woods, taboos). Burkina Faso is party to international agreements on Biodiversity, Climate Change (Kyoto Protocol), Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, and Wetlands.

The Environmental Code provides (in *Article 17*) that activities likely to have significant effects on the environment are subject to prior review by the Minister of Environment based on an EIA study or other evaluation document. The EIA implementation procedure is burdened by weak capacities of national actors and a low level of enforcement. Sector guides are currently under development to help facilitate the understanding and approval of the procedure. Local human resources for assisting with the EIA process are available via the Burkina Faso National Association of EIA professionals.

Conservation and Forestry.⁵³ Burkina Faso has several laws, policies and strategies around the Legal Framework affecting conservation and forestry. The most relevant laws and policies are described in an International Union for Conservation of Nature (IUCN) report called “An IUCN situation analysis of terrestrial and freshwater fauna in West and Central Africa”. The report identifies and describes the main institutional laws, policies, and strategies regulating the country’s aim to conserve and search for sustainability. The country is also a member on several international agreements, treaties and conventions such as: Convention on International Trade in Endangered Species of Wild Fauna and Flora, United Nations Framework Convention on Climate Change, and United Nations Convention to Combat Desertification just to name a few. More detailed information can be found in the Tropical Forests and Biodiversity Analysis for Burkina Faso.⁵⁴

Law No. 006-2013/AN (Loi n°006-2013/AN portant code de l’environnement du Burkina Faso) of 2 April 2013 provided the Environmental Code of Burkina Faso and repealed Law No. 005/97/ADP (Loi n° 005/97/ADP portant Code de l’environnement au Burkina Faso) of 30 January 1997. The new Environmental Code aims to protect people against the threats caused by the degradation of their environment and to improve living conditions. It states that promoting a healthy environment is of general interest and the responsibilities of all individuals. It further states that maintaining environmental quality and the restoration and enhancement of natural resources must be based on the principles of participation and public information, prevention, precaution, polluter pays, sustainable development, and subsidiarity. It recognizes the rights of local populations, civil society, and the private sector to participate in the management of their environment and it enshrines a right to use natural and genetic resources for local people and the sharing of benefits arising from their exploitation.

Climate Adaptation Planning. Burkina Faso’s resilience to climate change is guided by the country’s 2015 National Adaptation Plan (NAP), which aims to “(i) reduce vulnerability to the impact of climate change by developing adaptation and resilience capabilities; (ii) facilitate the integration of climate change adaptation into new or existing policies, programs or activities and in specific development planning processes and strategies in pertinent sectors and at various levels in a coherent manner.”⁵⁵ In addition, the Second National Communication of Burkina Faso on Climate Change to the United Nations Framework Convention on Climate Change highlights climate mitigation commitments of the country and sector specific climate risks and adaptation measures.⁵⁶

Water Resources. In Burkina Faso, the National Office of Water and Sanitation (ONEA) serves most urban areas and some rural areas. In 2003 the country adopted an action plan for integrated water resources management. This plan indicated a shift towards a decentralized water system. Following up on that plan, in 2004 Burkina Faso adopted the General Charter of Territorial Collectives (CGCT). As of 2008, urban areas were reasonably well serviced by ONEA whereas rural areas were underserved. The CGCT gave responsibility for rural water supplies to

⁵³ Excerpts from DCHA BEO FY18 RFA Burkina Faso, Niger IEE. 2018.

https://ecd.usaid.gov/document.php?doc_id=50497

⁵⁴ <http://www.usaidgems.org/118119/faa118119Africa.htm>

⁵⁵ http://www4.unfccc.int/nap/Documents/Parties/PNA_Version_version%20finale%5bTransmission%5d.pdf

⁵⁶ http://www4.unfccc.int/nap/Documents/Parties/PNA_Version_version%20finale%5bTransmission%5d.pdf

local communities. While there is legal infrastructure in place to address the lack of water resources in rural areas, some challenges to implementation over the past two decades have included a lack of technical assistance to implement the plans. In addition, there have been conflicting interests between the different parties responsible for increased rural water access.⁵⁷

Land tenure policy.⁵⁸ After independence in 1960, land management in Burkina Faso was primarily left to customary institutions and governed according to customary law. The government's role was restricted to management of classified or protected land. The basis for the country's modern statutory system is the Réorganisation Agraire et Foncière, introduced in 1984 and amended in 1991 and 1996, which helped to develop a private property rights regime for land. The legislation vested all land in the state, regardless of customary tenure status, and outlawed all land sales in an attempt to make a clean break with customary rights. Citizens would henceforth be able to gain access to land through government rules of access, thus ending the power of traditional chiefs. Its interpretation in rural areas was that land belonged to whoever was cultivating it, regardless of customary rules. Amendments allowed them privatization of land, recognized use-rights and long-term leases, and enabled the state to cede land to private operators.

The legislation also created a national village land-use management program that operates Commission Villageoise de Gestion des Terroirs (CVGTs), village-level representative committees responsible for land management. These bodies were intended to represent the village by bringing together customary leaders and members of underrepresented groups in committees. In practice, however, CVGTs have not realized their purpose, as the Réorganisation Agraire et Foncière is commonly superseded by customary systems at the village level. The commissions are more often associated with donors or viewed as State projects, rather than as belonging to the community. Another local body that plays a role in land management is the Conseil Villageois de Développement (CVD), which is tasked with managing and resolving conflicts and 'finding solutions to land tenure problems' according to the 2004 Code Général des Collectivités Territoriales (2004 Decentralization Code). Both CVGTs and CVDs are evidence of Burkina Faso's push for decentralization, which has sought to transfer management responsibilities over land to local bodies.

Rural Land Tenure Law. The latest development in this process was the adoption of the new Rural Land Tenure Law (Act. No 034) in June 2009 following a long, transparent, and inclusive process. The goals of the new law include:

- 1) ensuring equitable access to rural land;
- 2) promoting investments in agriculture, forestry and pastoralism in Burkina Faso;
- 3) reducing poverty in rural areas; and
- 4) promoting sustainable management of natural resources.

In addition, the new law is meant to protect property rights, prevent and manage land conflicts, and build a framework for ensuring rural land tenure security. The law furthers decentralization

⁵⁷ http://pdf.usaid.gov/pdf_docs/PNADO927.pdf

⁵⁸ 2017 USAID ASTER IEE on Burkina Faso. <http://gemini.info.usaid.gov/repository/pdf/50407.pdf>

in Burkina Faso and codifies principles of customary rights by enabling communities to draft *Chartes Foncière Rurale* (Rural Land Charters), which are local conventions based on customary land uses. These land charters contain rules relating to conservation or shared natural resources, the process of giving and receiving land loans, and land dispute management. The new law provides the governing framework for the land charters, which vary according to local needs and customs to reflect the diversity of Burkina Faso's people and ecosystems.

Local land charters are created at the village level in a participatory manner that includes a representative group of stakeholders (including women, forest users, pastoralists, and youth), and is aided by the state. They are adopted at the village level, validated at the municipal court, and recorded in the register of local land charters.

The 2009 law also enables legal recognition of individual and collective land rights, the transfer of certificates of rural land possession through inheritance, oral and written rural land leases, and the creation of local land management institutions. These bodies include:

- *Service Foncier Rural* (Rural Land Service), a national institution represented in each community;
- *Commissions Villageoises Foncière* (Village Land Commissions);
- and 'local consultative bodies for land-related matters' in rural municipalities.

The Rural Land Service and Village Land Commissions are designed to work together to maintain public spaces and common areas, secure individual land tenure rights, and prevent disputes. The 2009 law created the *Attestation de Possession Foncière Rurale (AFPR)* (or Rural Land Possession Certificate), which can be granted to individuals and associations. This replaces the previous practice of issuing 'minutes of palaver' that affirmed rights to land usage. In the new system, certificates can be obtained within 75 days if no objections are raised. Any property owner may request an individual certificate or recognition of possession by submitting an application to the Village Land Commission (these may be made orally). The commission forwards it to the Rural Land Service, which checks that no possession or property title has been previously established on the parcel in consultation with local customary and traditional authorities.

The rural land possession certificate is then prepared for the Mayor's signature on behalf of the applicant. In the case that there are competing claims to the land, the case is referred to the *Commission de Conciliation Foncière Villageoise*, which reviews it for up to 45 days through local-level consultations. Only if this is unsuccessful is the case referred to the local court, or *tribunal de grande instance*. AFPRs differ from full land ownership titles in that they confer the right to use undeveloped land; they entail rights of *usufruct* (use and profit), but not *abusus* (alienation¹). AFPRs may be used to obtain bank loans, depending on individual bank requirements and can be loaned, donated, rented, or passed on to the next generation.

Local consultative bodies must include members of development committees, traditional land chiefs, representatives of state and local government, representatives from women's groups, and technical experts. Mayors and prefects also take part in conflict resolution relating to land

disputes. However, these groups can only examine and issue reports and suggestions. Most groups with customary claims over land also have a land chief, or *chef de terre*, who has a connection with the ancestors who initially approached the local spirits of the land. The *chef de terre* stands as a symbol of the inalienability of that group's right to land. The 2009 law sets forth the framework for addressing land disputes, stating that parties should first attempt to resolve the situation with local authorities, per procedures in the local land charter. The law gives local authorities a 45-day period, which may be extended once, in which to reach conciliation between the parties. Addressing the courts and initiating litigation should only be used as a last resort.

2.2.3 NIGER REGULATORY STRUCTURE

Constitution and Regulations. In light of the climate and ecological characteristics and the overall reliance on agricultural and pastoral livelihoods by 80 percent of the country's population, natural resources management and environmental protection is one of the top priorities of the Nigerien government. The local governance of natural resources is well-defined in the Government of Niger "Strategy for the Accelerated Reduction of Poverty (2008) and the Rural Development Strategy". The Government of Niger has enacted the following laws governing the natural resources management and environmental protection:

- "Executive Order n° 98-56" related to environmental management and bio-diversity conservation;
- The executive convention to fight against desertification;
- The law for the protection of fauna and the management of wetlands;
- The Environmental Code;
- Law 1971 017 governing fishing;
- Law 2004-040 governing forestry; and
- "Executive Order n° 93-014 governing water systems.

Oversight Bodies. The National Council for Sustainable Environmental Development, a Ministry-level agency in charge of environment, a permanent secretariat for the rural code and its decentralized services, has oversight of natural resources management and environmental regulation. The rural code on environmental issues has two components: one is juridical and the other is institutional. The juridical one is defined by "Executive Order 93-015" and its legislative and statutory texts. The institutional component includes the National Committee of the Rural Code-15 and its Permanent Secretariat, the departmental land tenure commissions, the communal land tenure commissions and community-based land tenure commissions.

Niger is also member of and implementing the United Nations Framework Convention on Climate Change, the protection and conservation of water and water resources and maintaining environmental health, as well as the prevention of natural disasters. Niger is also member of other regional and sub- regional agreements on environmental protection and the fight against desertification.

Conservation and Forestry. Although Niger is a signatory of many international treaties, including Convention on International Trade in Endangered Species of Wild Fauna and Flora and Convention on Biological Diversity, the country's capacity to implement treaty or convention

agreements is weak due to a lack of information given to key government stakeholders and a lack of resources. Commonly, government agencies look to NGOs or cooperation agencies to collaborate and/or coordinate activities and actions related to treaties/conventions. More detailed information can be found in the Tropical Forests and Biodiversity assessment for Niger.⁵⁹

Land tenure. The Rural Code is a key element of the Nigerien national policy on rural land tenure and the management of natural resources. It hinges on a legal system (composed of all the rules and regulations concerning land tenure and natural resources management) and an institutional system (a group of institutions that implement and monitor those rules). The two systems apply at different levels, from the local level to the national one. The Rural Code consists of a series of legal texts; the 1993 ordinance (*ordonnance cadre*) containing its guiding principles and sector-specific legislation. At the national level, the National Committee of the Rural Code defines global policy guidelines for the State. It is chaired by the Ministry of Agriculture and includes other ministries involved in the management of land and natural resources.

The rural agricultural zone is the part of the national territory located south of the limit for cultivation as defined by the 1961 Law. The private property system applies to this area. Land property can be acquired through custom or positive law. When no ownership rights can be established, the land is considered vacant and belongs to the State or to decentralized local institutions. The Ministry of Agriculture (*Ministère de l'Agriculture*) is responsible for the preparation, implementation, and monitoring of the national policy on agricultural development.

The rural pastoral zone is the part of the national territory located north of the limit for cultivation defined also by the 1961 Law. It belongs to the State. The rights of pastoralists (who own or keep cattle) include free access to natural resources in the pastoral zone, they hold a common use right for this zone. Ministry of Livestock (*Ministère de l'Élevage du Niger*) ensures the development and promotion of livestock through the design, development, and implementation of the national policy for productions development, the animal industries, and the national animal health policy.

Climate Adaptation Planning. To limit the impacts of climate change to Niger, the country's NAP is being developed, as highlighted by the 'stocktaking activity and recommendations' conducted in 2014 to prepare for the NAP.⁶⁰ Niger released their Second National Communication on Climate Change to the United Nations Framework Convention on Climate Change in 2009 and their Third National Communication on Climate Change in 2016.^{61, 62} These documents guide climate change mitigation commitments from the country and highlight climate change adaptation needs.

⁵⁹ <http://www.usaidgems.org/118119/faa118119Africa.htm>

⁶⁰ http://www.adaptation-undp.org/sites/default/files/downloads/draft_niger_stocktaking_report.pdf

⁶¹ http://adaptation-undp.org/sites/default/files/downloads/niger_snc_english.pdf

⁶² https://unfccc.int/files/national_reports/non-annex_i_natcom/submitted_natcom/application/pdf/nernc3.pdf

Water Regulation and Management. Water is a strategic resource and constitutes State property. Rivers, lakes, ponds, sources, and groundwater are therefore considered State property. The Ministries of Environment and Water (*Ministère de l’Hydraulique et de l’Environnement*) are responsible for the design, development, implementation, and monitoring and evaluation of national environment and water policies and combating desertification. They are specifically responsible for defining and implementing policies and strategies relating to water, forest, wildlife, fisheries, and apiculture resources.

3.0 ANALYSIS OF POTENTIAL ENVIRONMENTAL RISK⁶³

This section describes the results of an analysis of project elements for potential adverse environment, social, and climate impacts. The risks that climate change poses to the actions is described in Section 4.2. Social impacts are discussed in Section 3.5.

3.1 ACTIONS WITH NO EXPECTED IMPACT ON THE ENVIRONMENT

Certain actions under 216.2(c)(2) are eligible for a pre-determination categorical exclusion from further analysis within this Programmatic IEE as they do not have an effect on the natural or physical environment or they are research actions that have a limited scope and are carefully controlled with effective monitoring. For example, actions that offer technical assistance, build capacity through training and education, offer analysis or academic studies and surveys, transfer information or data, receive a Categorical Exclusion as long as there is no resulting negative impact on the physical environment.

In summary, the following actions have low or no environmental impact. These actions also coincide with those identified for pre-determination categorical exclusions per 22 CFR 216.2(c)2:

- i. Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.);

Illustrative actions:

- Facilitating inclusive governance over water resources based on host country policies on drinking water service delivery
- Building capacity for stakeholder engagement
- Support for inclusive property rights
- Organizing communities and creating land right movements and organizations
- Organizing communities and agricultural associations
- Developing insurance schemes to reduce and manage risk
- Conducting pilot projects on ag and livestock insurance, including subsidies
- Peer to peer learning, contingency planning support
- Coordinating with financial institutions or other key actors on business transaction
- Supporting community savings and loans
- Building financial, vocational, leadership, and life skills
- Improving literacy and numeracy skills in women and youth

⁶³ Includes analysis of environmental and social risks

- Developing and promoting tools and strategy for household management of assets
 - Educating and building capacity for local organizations
 - Supporting migration benefits to local communities as it relates to human capital development, financial services, communication services
- ii. Controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas and carefully monitored;
- iii. Analyses, studies, academic or research workshops and meetings;
- Illustrative actions:*
- GIS and geospatial mapping
 - Communication and surveys
 - Indicator tracking systems for early warning
 - Data management
 - Supporting platforms for reducing conflict over resources
 - Researching, surveying markets, and building professional networks and opportunities
 - Examining ongoing actions while considering regional strategies
 - Conflict management and resolution actions, such as conflict early warning systems and local conventions
- iv. Projects in which USAID is a minor donor to a multi-donor project and there is no potential significant effects upon the environment of the United States, areas outside any nation's jurisdiction or endangered or threatened species or their critical habitat;
- Illustrative actions:*
- Coordinating with other donors and civil society actors in watershed management and groundwater analysis
 - Supporting safety nets and social protection systems
- v. Document and information transfers;
- Illustrative actions:*
- Distributing and increasing consumption of climate and market information to rural poor
 - Promoting girl attendance and safety in schools
 - Supporting public and civil society in consultations and problem identification
 - Analyzing community based organizations (CBOs) and enhance their capacity and visibility to engage in dialogue with the government and motivation to do so
- viii. Programs involving nutrition, health care or population and family planning services except to the extent designed to include activities directly affecting the environment (such as construction of facilities, medical or solid waste generation, water supply systems, waste water treatment, etc.)

Illustrative actions:

- Encouraging behavior change strategies for health, nutrition, hygiene, and maternal and child health and nutrition (MCHN)
 - Developing and implementing policies for strengthening institutional structures in health systems
 - Strengthening mobile outreach for family planning and Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) services
 - Training of health workers on integrated community case management
 - Strengthening linkages within the health systems at the community and district level
 - Improving care of women and children where the actions do not involve the generation of medical waste
 - Increasing utilization of key health and nutrition services
 - Improving nutrition and health practices, not including clinical training of health workers
 - Improving hygiene behaviors
- xiii. Matching, general support and institutional support grants provided to private voluntary organizations (PVOs) to assist in financing programs where USAID's objective in providing such financing does not require knowledge of or control over the details of the specific activities conducted by the PVO;
- xiv. Studies, projects or programs intended to develop the capability of recipient countries to engage in development planning, except to the extent designed to result in activities directly affecting the environment (such as construction of facilities, etc.); and
- Illustrative actions:*
- Promoting policy and governance through creation of sectoral associations and producer groups
 - Supporting government and the private sector to develop early action plans targeting economic recovery
 - Supporting government health systems for behavior change
 - Building capacity of government institutions for financial, budgeting, and resource allocation
 - Analyzing CBOs and enhancing their capacity
 - Developing policy to strengthen preparedness, disaster risk reduction (DRR), and early response
 - Strengthening national government and regional capacity and coordination
 - Facilitating the clarification of roles and responsibilities and enhancing capacities to effectively implement host country policies, operations, and maintenance
 - Demonstrating approaches to strengthen local systems of leadership, management, workforce development, and data collection
 - Analyzing national strategies to align them with interventions of institutions responsible for managing them
- xv. Activities which involve the application of design criteria or standards developed and approved by USAID

3.2 ACTIONS WITH POTENTIAL INDIRECT IMPACT ON THE ENVIRONMENT

Indirect impacts are those which are not directly related to the action but based on the target sector or influence of the action, may result in environmental impacts in the foreseeable future. Impacts are indirect if through implementation of that activity, there is an environmental impact. In many of these cases, mitigating the impacts of these actions is beyond the immediate control of USAID; however, USAID must still make all reasonable effort to address the impacts.

Illustrative actions:

- Encouraging the private sector to explore and develop groundwater resources through business planning, market linkages, and operation and maintenance services
- Encouraging development of groundwater resources may result in indirect impacts, along the lines of a drawdown of ground water, which may affect discharge rates into a nearby stream and then adversely affect aquatic species over time. Or, successful economic development in a town may induce others to move in resulting in more housing perhaps more roads, and so on.
- Supporting to public private partnerships (PPP) where USAID provides partial funding to encourage private investment.
- Producing of decision support tools through geographic information systems (GIS) and geospatial mapping
- Coordinating with other donors, national, and civil society actors in watershed management, including technical support for the use of watershed management data
- Building capacity and communicate roles and responsibilities of stakeholders in land management and inclusive management

3.3 ACTIONS DESIGNED WITH SAFEGUARDS IN PLACE OR FOR THE PURPOSE OF ENVIRONMENTAL ENHANCEMENT AND MITIGATION

The following actions have no foreseeable adverse impacts as they have design features which mitigate their impact upon implementation, These actions may also serve as the mitigation measures for other actions.

Illustrative actions:

- Improving water management at the local level through promotion of efficiency and optimizing allocation practices
- Introducing and implementing watershed headwater exclusions zones
- Supporting national policy plans and policy development to strengthen preparedness and early response
- Building capacity to select post-harvest technologies and climate smart production practices
- Improving governance of natural resources – local capacity building

3.4. ACTIONS WITH DIRECT IMPACTS ON THE ENVIRONMENT

Environmental impacts for broad sectors of actions are described in below. These impacts may be associated with multiple types of actions supported under the SRO RISE II PAD and countering violent extremism (CVE) programming.

3.4.1 NATURAL RESOURCE MANAGEMENT (NRM) AND MIXED NRM

Within natural resource management, there are a myriad of interventions that could be considered part of this category. While in general, the objective of NRM is to improve the sustainability and safeguards of ecosystems; NRM is often used to achieve other purposes, such as improving agricultural production, stabilizing land for construction or human safety, increasing water yield for household and agricultural use, or providing income generation activities, among others. These actions are cross-cutting within numerous inputs associated with the RISE II PAD, and therefore, the general impacts of actions associated with natural resource management are described here.

3.4.1.1 SOIL AND WATER CONSERVATION

Soil and water conservation actions, including hard infrastructure (i.e., flood control structures – check dams, weirs, gabions, flood walls; erosion control; groundwater recharge structures – trenches and catchments; and storm water management) are intended to control erosion, otherwise conserve and improve soils, recharge groundwater, and improve soil moisture and temperature. Most of the water conservation techniques under natural resource management intend to recharge groundwater and improve soil moisture, but building of these structures can have some associated adverse impacts of construction and excavation and earth works. Properly implemented, the soil and water conservation interventions cited do not pose foreseeable risks of adverse impacts, but it must be noted that terracing, dams, and bunds require careful attention to precise siting and technique to be effective and sustainable.

Soil and water conservation measures often require some establishment of structure to retain soil or divert water. Adverse impacts from building these structures may be associated with general adverse impacts of construction and excavation and earth works addressed in Section 3.4.7. In these instances, local timber, bamboo, stone and gravel resources are frequently used. Sourcing of these resources can be expected to have environmental impact either adjacent or far (if sourced in another region or country) from the activity, and tracing that impact may be difficult, but none-the-less, contribute to deforestation and environmental degradation. Inappropriate design of infrastructure can pose a threat from dam breach and stagnation of water may contribute to disease transmission.

3.4.1.2 PLANTINGS, FORESTRY AND AGROFORESTRY

Afforestation, plantations, and nurseries. Afforestation, plantations, and nursery actions may involve native or non-native ornamental plants depending on the objectives. In general, these actions will be associated with adverse impacts described in Section 3.4.9 addressing agriculture. Invasive species are discouraged from USAID activities. Plantations, while economically productive and providing most of the soil-conservation and runoff-control benefits of forests, are not bio-diverse habitats and do not substitute for natural forests in this way. Homogenous plantations or reforestation are generally more susceptible to pests and fire and may not provide habitat diversity for wildlife corridors. Furthermore, these actions may have inadvertent impacts on ecosystem dynamics, causing shifts that impact plant and animal diversity and reduce the system's adaptive capacity. For example, plantations and nurseries may be demanding on local water supply, especially during the early growth phases. Likewise, fertilizer and herbicides/insecticides, especially in the plantation and nursery settings, have the

same environmental impacts as agricultural actions in that they can kill non-target species, contribute to eutrophication, and change soil acidity.

Improved or introduction of new species. Specifically, the selection and introduction of ‘improved’ species and techniques, including water and soil management and conservation practices, may be inappropriate and poorly suited to local environmental conditions. Many best practices are highly context specific; what is environmentally beneficial in one area may be adverse in another (e.g., crop agro-forestry species choices)—this is of concern particularly in the proximity to protected areas, where biodiversity resources are likely already at risk.

3.4.1.3 FARMER-MANAGED NATURAL REGENERATION (FMNR) AND COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT (CBNRM)

Promotion, stakeholder collaboration, and capacity building, Efforts to improve stakeholder collaboration for the management of forests and protected areas necessarily entails the formulation and implementation of NRM strategies and plans, and therefore, do not qualify for a categorical exclusion. Moreover, any training/capacity building in the types of collaborative approaches envisioned here (e.g., farmer-managed natural regeneration) will likely include technical material related to specific management practices/objectives. Effectively implemented, the enhanced techniques (best management practices—BMPs) are expected to be environmentally beneficial. However, their use in and near protected or otherwise sensitive areas can lead to selective or incomplete adoption of BMPs that unintentionally lead to clearance of natural forest for tree lots, unsustainable harvesting levels of natural products, poorly controlled use of pesticides, fertilizers or other inputs, expansion of exotics into protected areas, and/or the clearing of new or protected land for cultivation.

Community-based natural resource management and governance. The intent of local environmental governance is to better implement land and natural resource use plans. Assuming these plans are sound and sustainable, and increased local governance is accompanied by increased monitoring and oversight, results should be strongly beneficial. Experience shows, however, that failure to achieve these co-conditions can easily lead to a set of significant adverse impacts, including rent-seeking “policy capture” by non-accountable local authorities. Efforts can, at worst, facilitate destructive or unsustainable exploitative practices such as clearing of natural forest—within or adjacent to protected areas—for cultivation of staple crops or agroforestry species, or selective or incomplete adoption of best practices (e.g., poorly controlled use of pesticides and fertilizers with potential consequent adverse impacts on water quality, aquatic organisms and human health). More generally, the selective or incomplete adoption of identified best management practices may compound food insecurity by further degrading the natural resource base or compromising the introduction of promising cultivars.

3.4.1.4 DEVELOPMENT OF NATURAL PRODUCTS VALUE CHAINS

The development of natural products can provide alternative livelihoods to communities that are engaging in actions (e.g., poaching, logging, overfishing, or mining) that destroy natural resources within environmentally sensitive areas including reserves and protected areas. Natural products development should improve the economic status of communities and may include actions such as introducing beekeeping and honey gathering, mushroom gathering, and grass or fodder harvesting for selling sustainably harvested natural products. However, the

over-exploitation of natural products may also have adverse impacts on biodiversity and forest ecosystems and the long-term viability of natural resource-based livelihoods. As such, effective natural products strategies will balance the ecological *and* economic dimensions of natural resource management.

Natural product markets can benefit non-sustainable as well as sustainable harvesters. Semi-intensive production techniques can become intensive for natural products amenable to plantation cultivation, with attendant land clearing, pesticide use, etc. In this case, their biodiversity impacts can become adverse rather than beneficial, and other adverse impacts (e.g., related to inappropriate pesticide use) are possible as well. Commercialization of certain agricultural and natural products can rapidly lead to over-exploitation (e.g., non-sustainable harvesting) and environmental degradation in/around protected areas.

The potential adverse impacts stemming from natural products initiatives are heightened by proximity to protected areas and habitats otherwise rich in biodiversity and other resources. The level of environmental risk in these scenarios is relatively higher than in other contexts—the existence of a protected area already denotes an environment of certain importance. The key challenge is empowering rural populations in and around forests and protected areas with economic opportunity and livelihood options that align with conservation objectives.

3.4.1.5 LAND MANAGEMENT PLANNING

Land use management plans are intended to conserve soils, the economic productivity of land, including forests, and the ecosystem services that forests and other land cover types provide. The principle risk is that they fail to be fully based on principles of sustainable use, or do not address the adverse social impacts on communities that can result when strengthened management of forests reduces community access to forest resources.

3.4.2 RANGELAND MANAGEMENT AND LIVESTOCK PRODUCTION/ MANAGEMENT

3.4.2.1 DAIRY/LIVESTOCK PRODUCTION AND PROCESSING

The use of cattle, sheep, goats, pigs, poultry, and other livestock offer many benefits to the growing global population and millions of farmers in the developing world. These animals are integral to rural livelihoods and local cultures, providing food (meat, eggs and other dairy products), materials (wool, hide, horns, etc.), income, and mechanical power for pulling carts, drawing water or plowing fields. Properly managed, livestock production can enhance land and water quality, biodiversity, and social and economic well-being. However, when improperly managed, livestock production may cause significant economic, social and environmental damage. Increasing livestock production has the potential to increase environmental harm.

General. Livestock actions, in general, can be associated with the following environment impacts:

- *Land degradation.* Adverse impacts of livestock are associated with overgrazing and use of marginal lands, soil erosion and compaction, land degradation and diversification, loss of natural habitats and resulting losses of biodiversity.
- *Loss of biodiversity.* Breed has a strong influence on disease susceptibility and therefore on disease management. Systematic livestock production may result in loss of genetic diversity in livestock species and subsequent susceptibility to disease outbreaks. An

uncontrolled introduction of new breeds (live animals or through artificial insemination) could also cause a gradual disappearance of local pure breeds if the crossing is not well controlled.

- *Water pollution.* Contamination may occur if nutrients from manure enter the water table because they are either improperly used or disposed of. Water pollution can also be associated with improper processing and disposal of dead animals that release nutrients into the ground water as they decompose. Animal manures transported from fields, pens or feedlots into water bodies through rainfall, runoff or irrigation can pollute local drinking water sources and spread human and animal diseases.
- *Air pollution.* Livestock production can increase greenhouse gas emissions from enteric fermentation, from livestock manure and burning of animal carcasses.
- *Social impacts.* When policies do not consistently address the land tenure issue for farmers and pastoralists, livestock keepers may potentially increase animal stock beyond land carrying capacity, thus contributing to enhanced competition for resources, and eventually, to conflicts that can become violent.
- *Animal transmitted diseases.* A zoonotic disease is an infectious disease that is transmitted between species from animals to humans (or from humans to animals). Animal transmitted diseases such as Brucellosis, Giardiasis and Ringworm (Dermatophytosis) that are transmitted from animals to people are widespread in Africa. Animal mobility through transhumance could also be a factor in the spread of disease if the animals are not vaccinated.
- *Spread of invasive species.* Many herbaceous species spread easily through animal hair. Thus, the movement of animals through transhumance could also be a factor in the spread of these invasive species.

3.4.2.2 FODDER AND FEED PRODUCTION

Intensification of livestock production can promote a system of mono-cropping for feed production. Impacts associated with fodder production are similar to those described in the Section 3.4.9 on production of agricultural crops including impacts associated with unsustainable intensification of agricultural production, land clearing and degradation, land erosion, siltation of water bodies and environmental pollution associated with use of agricultural chemicals.

3.4.2.3 VETERINARY SERVICES AND VACCINATION CAMPAIGNS

Livestock operations typically involve (1) periodic use of drugs and injectable pharmaceuticals and vaccines resulting in generation of hazardous medical waste; and (2) topical use of pesticides to control pests.

The impact of veterinary chemicals and associated waste on the environment will depend on many factors such as their properties and conditions under which they were administered and disposed of or otherwise released into the environment. Veterinary waste may lead to contamination of air, water, and soil which may affect all forms of life including human life. Once released the impact of veterinary chemicals will depend on amount, soil type, climate, ecotoxicity, and other factors. Pharmaceuticals and pesticides used for treatment of livestock

have the potential to contaminate soils, ground and surface water, sediment and adversely affect all live organisms including people. Contact with waste that is contaminated with a zoonotic disease is classified as biohazardous. Improper use of veterinary products could also create resistance to certain pathogenic microorganisms in animals. If product remanence times are not respected, residues of veterinary drugs in animal products (meat, milk) could also be harmful to consumers. Sharp veterinary waste poses risk of injury and infection. Sharps are devices with acute rigid corners, edges, or protuberances capable of cutting or piercing. Sharps waste includes, but is not limited to hypodermic needles and blades. Broken glass items are considered sharps waste when they are contaminated with biohazardous waste.

3.4.2.4 DAIRY PROCESSING

Among the most significant impacts of small dairy processing are unhealthy or unsafe working conditions, liquid and solid waste generation and pollution of soil and water, inadequate machinery maintenance and lack of spare parts. Raw unpasteurized milk can carry dangerous bacteria such as Salmonella, E. coli, and Listeria, which are responsible for causing numerous foodborne illnesses. Dairy processing requires disinfection, so liquid waste waters may contain disinfectant products as well as diseases, veterinary pharmaceuticals, or feces from the animals. These contaminants can impair surface water quality and cause fish kills. Additionally, discharge to water bodies can increase algal growth and increase biological oxygen demand.

3.4.2.5 RANGE MANAGEMENT

As a result of livestock intensification, grazing areas can be threatened with degradation, especially in the semi-arid and sub-humid zones where the best land is used for crop production and livestock cannot be moved between grazing areas. When, after a few years, the land is exhausted and returned to fallow, it does not revert to good pasture. This means that if animals are kept for too long in one place the land becomes degraded.

Livestock grazing influences erosion primarily through its impacts on soil and vegetation. Heavy grazing generally increases erosion; however, depending on the soil types and length of grazing period, heavy grazing in the dry season could break up crusts and improve water infiltration. Grazing affects both live plants and plant litter materials, and has effect on soil infiltration of moisture and porosity due to trampling and vegetative roots damage. Soil compaction in turn affects runoff potential of the rangeland. When runoff occurs, its erosive nature transports soil nutrients from the site and can even reduce topsoil depth, which decreases the amount of water that can be stored in the soil. Erosion and loss of topsoil reduces water available to plants and vegetative growth. Erosion of shallow soils with sloping terrain has even higher risk of reducing range productivity.

Through overgrazing, the grasses are depleted and woody plants can flourish. Invasive bushy trees, very often thorn trees, can form impenetrable thickets so that productivity of the land is seriously reduced.

A common consequence of growing numbers of people and livestock is that livestock get moved into more marginal areas. Areas that naturally have less fodder or accessibility (e.g., mountain slopes, sandy dune fields, more saline soils) become invaded. These more marginal areas might support specialized biota or be more vulnerable to overgrazing, so their vulnerability is higher and the negative impact of land degradation grows.

This can result from the breeding of livestock with requirements which beneficiaries cannot provide, such as high-quality fodder and water, enclosures or fencing, and access to veterinary attention. Over-use and encroachment onto marginal land and sensitive habitats is also a result of failing to develop sustainable grazing plans that facilitate mechanisms to destock and restock as conditions dictate, so that stocking rate tracks fodder and water availability.

Fire is an important natural event in rangeland ecosystems. Changing the fire regime (through changing the frequency or the intensity of fires) can have a significant impact on the ecological integrity of an area. The use of fire as a management tool requires that it be applied at the correct frequency (return interval), intensity (heat release), spatial scale and time (the beginning of dry season is often the best time or the beginning of the rainy season in the humid savannahs to clean up the dry residues and facilitate the re-growth of the grass). However, inappropriate application of fire can eliminate useful forage and pose serious threats to human life, property, community assets, air quality and rangeland values including water, wood, and biodiversity.

Changing patterns of water availability or water quality of a rangeland can be critically important. Rangeland animal excrement impacts water quality, increasing nutrient and pathogen load of the water. Pollution from pastured and rangeland livestock depends on the stocking rate, length of grazing period, the season of use, manure deposition sites and concentration. Pollution caused by livestock excrement may be aggravated by the close proximity of deposition to water bodies.

3.4.2.6 FENCING

Fencing serves many purposes, and both the positive and negative effects of various types of fencing (livestock fencing, veterinary cordon fencing, protected area perimeter fencing, road/railway fencing) on wildlife is well documented. The potential negative impacts of fences on wildlife vary based on design, location. As barriers, fences can impede mobility of animals who are unable to cross or go around them and reduce the frequency of animal movements. Whereas these effects are easily imagined for large mammals, fence barrier effects may also affect smaller creatures like reptiles, insects, and birds. This way, border fences fragment habitats, split populations, cause genetic isolation and alter behaviors that may be important to the long-term survival of the populations or species involved. As a result, fences may cause gradual population reductions or even quite sudden mass mortality. Climate change has made the importance of mobility for wildlife all the greater, as the distributions of many species, including sedentary ones, are shifting in response to changing climatic condition.

3.4.3 FISHERIES AND AQUACULTURE

The fisheries sector is divided into two major sub-sectors: capture fisheries and aquaculture. The term “capture fisheries” is applied to the practice of harvesting wild fish and other aquatic organisms. Both industrial and artisanal fishing practices fall under this category. Aquaculture is the practice of raising and harvesting fish and aquatic organisms under controlled circumstances. Typically, dryland aquaculture small reservoir fisheries grow finfish that consists mainly of hardy species such as tilapia and the African catfish (*Clarias gariepinus*). Aquaculture can be pursued in fresh and brackish water bodies.

Aquaculture can provide active benefits to water bodies, such as improving productive capacity and water quality, converting polluting waste products into fish protein, controlling the spread of diseases such as malaria and schistosomiasis, and providing sewage treatment and low-cost weed clearance in irrigation systems. Finally, wastes from aquaculture can be used as fertilizer for agricultural production. However, several negative environmental impacts may result from aquaculture actions, especially more intensive or larger-scale efforts.

3.4.3.1 SUPPORTING FISHING PRACTICES AND AQUACULTURE DEVELOPMENT

Impacts of capture fishing. There can be negative environmental consequences to capture fishing that include overfishing and bycatch, destructive fishing methods such as using dynamite or pesticides to kill fish, using destructive gear such as pesticide treated nets, destroying habitat through poor fishing practices and pollution.

Pollution. Aquaculture systems cause pollution in a variety of ways including:

- Pond water discharged into streams can raise sedimentation rates, accelerate the nutrient cycle and lower dissolved oxygen levels.
- Decomposition of excess food provided to breed species causes degradation of water quality and decreasing oxygen levels in the water body, which can be fatal to aquatic organisms. Consumption of excess food by benthic organisms, in an overstocking situation, can disrupt the balance of the entire ecosystem.
- Fish wastes from intensive aquaculture, in combination with decomposing excess food, also have the potential to cause algal blooms, harming surrounding habitats and depleting dissolved oxygen concentrations near the facility.
- Anti-fouling agents are often used to prevent organism growth on cages and netting. Some anti-fouling agents, such as copper sulfate and tributyltin are highly toxic to aquatic organisms.
- Human activities associated with aquaculture also generate pollution. Human wastes generated from habitation near aquaculture cages can degrade water quality and create health hazards. For ease of access, fish processing facilities are often located near fishponds or enclosures. If wastes from fish-processing actions are disposed of in fishponds, this also damages water quality.

Impacts on freshwater resources. Intensive aquaculture requires large quantities of freshwater, usually obtained from groundwater or surface freshwater bodies. This leaves less water available for downstream uses, such as municipal water supply and agriculture. Pumping groundwater near coastal areas may cause saltwater to enter the aquifer and contaminate the underground reservoir. Groundwater extraction may also cause land subsidence (i.e., land surface slump or collapse). If aquaculture ponds are not designed properly, saltwater can seep into surface reservoirs, canals and rice paddies, damaging drinking water reserves and crops. As noted above, pond water is often discharged into freshwater bodies, adding excess nutrients and pollutants and increasing salinity. Salts can also seep into drinking water sources from poorly designed sediment disposal sites.

Disease. Intensive aquaculture uses a dense stocking rate with intentional overcrowding. Overcrowding may induce stress in aquatic organisms and increase their susceptibility to diseases. It also contributes to poor water quality and the rapid growth and transmission of

parasites and pathogens, which may spread to wild populations and local capture fisheries. To treat and prevent disease, a variety of chemicals are used, including antibiotics, parasiticides (parasite-killing drugs), pesticides, hormones, anesthetics, pigments, minerals, and vitamins. These chemicals are generally used in finfish or hatchery aquaculture, and applied along with feed. They may disperse beyond the pens or ponds and affect non-target organisms. The over application of antibiotics has been shown to lead to the creation and spread of antibiotic-resistant bacteria.

Use of hazardous chemicals. Artificial breeding, pond preparation, water quality management and fish poisoning, insect killing, disinfectant and fish disease treatment may require use of chemicals that have adverse impacts on human health and the environment.

Adverse effects on other organisms. Organisms escaping from aquaculture systems may have adverse impacts on wild populations. Species bred or genetically engineered for aquaculture are selected for high growth rates and/or disease resistance, usually at the expense of other survival characteristics. If the escaping organisms are exotic or non-native to the area or water body into which they escape, they may become invasive, interfering with the established ecosystem that native species are a part of, impacting the food sources, spawning areas, and surrounding habitat. Non-native species may also introduce new diseases.

Adverse impacts on downstream users. Intensive and semi-intensive aquaculture systems require large volumes of fresh water, often drawn from surface waters. In rural areas, this results in less water available to irrigate crops and forces people (mainly women) to travel further to collect water for household use. Also, seepage and discharges from fishponds can degrade the quality of water available to downstream users, affecting drinking water, agriculture, capture fisheries and recreational uses of water bodies.

Feeding and fertilization. In integrated aquaculture systems, poultry droppings or livestock manure is added to fishponds to increase production of algae, a natural food for the fish, but purchased fish feed is also used. Fertile water filled with organic matter is used to water the adjacent gardens or fields. Poorly managed fish feeding can contribute to eutrophication and decreased oxygen levels in waters, and overwatering of fields can contribute to runoff with high nutrient content into local waterways.

Health risks. The use of livestock wastes to fertilize fish ponds is common. Providing fish are well-cooked and care is taken in cleaning them, there is no known public health risk arising from consumption. However, because animal wastes are deliberately introduced into the ponds, the water can present a health risk to individuals working in the ponds and children who may play in them. And the ponds may be a convenient source of water for domestic use. Irrigation of vegetables that are eaten uncooked may also present health risks.

Risks associated with pond construction. Poorly located and poorly designed and constructed fishing ponds can result in adverse environmental impacts. Type of soil, geography and topography, source of water for the pond and proximity to other water bodies will all play a role in site selection. Poorly constructed embankments and inadequately compacted pond bottom can result in excessive seepage losses that can contaminate ground water aquifers or surface water supplies.

3.4.4 WATER, SANITATION, AND HYGIENE (WASH)

In general, well-executed water and sanitation interventions bring substantial health and environmental benefits. However, for many actions, active mitigation efforts are required to prevent unintended adverse impacts that can offset or negate these benefits.

3.4.4.1 CONSTRUCTION AND REHABILITATION OF LATRINES AND HAND WASHING STATIONS

Construction and operation of latrines and hand washing stations have the potential to cause the following adverse impacts:

- *Contamination and odors.* Contaminate shallow groundwater and wells, and when not well maintained or of an open-pit design, can be the source of multiplication of flies, mosquitoes, spread of diseases, and foul odors. Improperly used, designed, or drained latrines or ponding of water from hand washing stations can also contaminate surface water through runoff.
- *Disease transmission.* Poorly designed sanitation facilities can lead to insect- and water-borne diseases as well as other water-related diseases. There are two groups of insects to consider: 1) *Culex* mosquitoes, which do *not* transmit malaria but can transmit filariasis, breed extensively in septic tanks and flooded latrines; and 2) Flies and cockroaches often thrive on excreta and have been implicated in some transmission of fecal-oral disease. Mosquitoes, flies, and cockroaches all constitute a great nuisance, and poor urban households have consistently been shown to spend substantial amounts of household incomes on using control coils and nets. Additionally, poorly designed or operating facilities can transmit disease due to fecal contamination of water supplies such as diarrheal disease, cholera, dysentery, typhoid, and giardia, among others.
- *Material sourcing and construction.* Construction with burnt brick poses particular concerns as it relates to deforestation. Construction might also utilize timber or stones and sand from local streams which can cause erosion, deforestation, and sedimentation of streams. Generally, latrine construction has impacts similar to those discussed for small-scale construction in Section 3.4.7.

Innovative latrine technologies may be promoted for their cost advantages, ease of construction, attractiveness to users, because they better address environmental contamination and disease vector problems, or for other reasons. As a class, however, they present the same potential risks as existing latrine technologies, and may or may not be an appropriate design choice in a specific context.

3.4.4.2 WATER SUPPLY AND DISTRIBUTION SYSTEMS

Water supply. Poor design, operation and/or maintenance of water supply improvements can lead to pools of stagnant water near water taps, water pipes and storage tanks. Improper or ineffective practices for disposing of excreta and solid waste can exacerbate this problem. Stagnant water pools form an excellent breeding place for disease vectors (mosquitoes that carry malaria, etc.), and surface water impoundments for household non-potable uses may be especially challenging to manage. They can also increase transmission of water-related diseases, especially when exchange of water is low or in other cases, during high rainfall, they may capture solid waste or excreta as runoff.

Adverse impacts to ecosystems can arise from water diversion, construction, or decommissioning actions in or near a watercourse, or from fecal contamination of water. Numerous impacts on ecosystems are possible including the following: i) construction of facilities in sensitive areas; ii) improperly designed water-supply projects that deplete fresh water, erode soil from pipe leakage, or create poor drainage at taps; and iii) contamination of receiving waters with human excreta or animal manure.

Depletion of freshwater sources can occur when projects do not adequately assess the quantity of available surface and groundwater (including typical seasonal and annual variations.) These assessments need to take into account future changes in temperature and rainfall due to climate change. Other causes include poor mechanisms for regulating withdrawals and use of water, and insufficient monitoring and maintenance of leaks.

Wells, boreholes, and water supply systems. Construction and operation of wells, boreholes and small water systems can cause the following adverse impacts:

- *Groundwater depletion.* Deplete groundwater when abstraction exceeds replenishment of groundwater resource. This can lead to conflict amongst users over water quantity or access to water. Drawdown is also a concern if other boreholes are located nearby, thereby reducing water access at adjacent locations.
- *Disease transmission.* Create stagnant (standing) water near the water supply point and creation of diseases vectors breeding sites (mosquitoes, risks of contamination of fetched water, foot infection of water point users, seepage in and contamination of the wells, etc.). Multiple use sites may pass zoonotic diseases to humans. Providing water that does not meet water quality standards can contribute to disease in both humans and animals.
- *Contamination.* Create human health risks from provision of biologically or chemically contaminated water. Even if water is not contaminated initially, it can become so through flooding, failure to exclude livestock from the water point, use of contaminated containers to draw water from hand-dug wells, and other factors.
- *Material sourcing and construction.* Even small-scale uses of burnt brick for water supply (e.g. well enclosures, water towers, etc.) can locally contribute to deforestation.

3.4.4.3 SAND ABSTRACTION AND SAND DAMS

Sand abstraction. Water from sand abstraction is a proactive intervention in and of itself in response to drought and more irregular rainfall patterns due to climate change. A potential direct impact of this activity is the water quality, although generally water from a sand river is much cleaner than surface water as it has been naturally filtered by the subsurface layers. However, where the surface area adjacent to the area of the sand abstraction has a very heavy concentration of livestock, the natural percolation cannot be expected to remove all harmful bacteria. This may result in consumption of non-potable water from sand abstraction and may lead to an increased incidence of diarrheal disease. However, secondary contamination from buckets and containers, as well as water drawn from surface water sources where livestock urinate and defecate, is far more serious.

Sand dams. The environmental impact of any engineered hydro-technical structure is largely determined by its location. If access to the site needs to be established, there is the potential for

direct impacts (vegetation clearing, dust, noise, impacts on wildlife) but also induced impacts through better accessibility of hitherto remote areas. While most materials should be sourced locally (stones, sand, gravel) some, such as cement, steel reinforcements, timber, and fuels may need to be transported and stored at the site. The sourcing of construction materials, especially sand and rocks, could have impacts on landscape, soils, erosion, and biodiversity if not well managed. There is a moderate contamination potential for surface and groundwater through loss or spills of cement / cement slurries, fuels and lubricants. Construction waste, especially rebar waste, empty containers, household waste from worker's camps may create hazards to people and livestock by injury or ingestion.

During construction some levels of emissions (dust, exhaust fumes, noise, vibrations) are unavoidable and will need to be managed to acceptable levels. When land is converted from a relatively natural state, vegetation and biodiversity will be locally impacted and wildlife may be disturbed. The main impacts during operation will result from the modification of the flow pattern, and resulting topography of river bed and embankments. There will be secondary / induced impacts due to the higher amount of people and livestock the reservoir could support. It will thus be important to assess, how far the surrounding pastureland will be able to remain in equilibrium with increased grazing activities.

Other potential direct impacts of this activity include the potential creation of standing water and lead to increased breeding of disease vectors. Movement of livestock to water points may also lead to erosion and soil loss. Dam walls are likely to breach if livestock are allowed to move on them. Livestock are likely to foul open water sources such as dams resulting in possible diseases spreading to humans.

3.4.4.4 DISTRIBUTION INFRASTRUCTURE - TOWERS, TANKS, SOLAR PANELS, PIPED SYSTEMS AND COMMUNAL TAPS

Construction/Installation of small-scale renewable energy sources/infrastructure systems are intended to result in far fewer adverse impacts than the traditional technologies (e.g. diesel generator sets) for which they serve as an alternative. They can make possible economic activity, communications and the other beneficial services that would otherwise be unavailable in remote/off-grid areas.

However, each water infrastructure or technology does have a set of potential adverse impacts that require management, but they are generally related to general construction risks. One exception is that communal or piped systems, if constructed with lead pipes or inappropriate soldering, or have ineffective water treatment for bacteria, can lead to contamination of large numbers of residents. Water testing is therefore critical.

3.4.4.5 WATER PURIFICATION AND TREATMENT

Point of use water treatment presents strong benefits if required dosage levels and procedures are followed. Health risks related to excessive dosing of water are minimal; the risk is rather of under-treatment and re-contamination that renders the point of use treatment ineffective. Further, appropriate dilution/dosage is the major focus of the intervention.

3.4.5 IRRIGATION AND LIVESTOCK WATERING POINTS

3.4.5.1 IRRIGATION SYSTEMS

Several factors will affect environmental and social impacts of irrigation including irrigated area, topography, shape of field, location, climate, irrigation method, water quality, crops irrigated, type of soil, availability and the source of water, alternative water sources, and competing uses.

Development/rehabilitation and operation of irrigation schemes. An array of adverse environmental impacts may be associated with newly irrigated areas and modifications to existing irrigation projects. They generally include the following:

- *Construction.* Construction of intake/diversion/impoundment structures presents high risks of damaging stream/river banks and introducing heavy sediment loads and potentially fuel, oil and other contaminants to downstream waters during the active construction period.
- *Soil salinity.* Intensified agricultural production on irrigated lands can reduce soil fertility over time by making it saltier (saline). A high level of salt in the soil limits the types of crops that can be grown, reduces crop germination and yields, and may make soils more difficult to work.
- *Waterlogging.* Excessive irrigation on poorly drained soils will create waterlogging. This occurs (as is common for salinization) in poorly drained soils where water cannot penetrate deeply. For example, there may be an impermeable clay layer below the soil. It also occurs on areas that are poorly drained topographically. What happens is that the irrigation water (and/or seepage from canals) eventually raises the water table in the ground. The groundwater table rises and causes a reduction of oxygen available to plant root systems. It also results in increased salinity as it brings the dissolved salts and minerals of the soil to the surface.
- *Hydrology.* Diverting water for irrigation affects watersheds by altering rivers' flow regimes (patterns of flow volume) and affecting the depth of the water table, including low flow regimes, flood regimes, water table levels and dams.
- *Erosion and sedimentation.* Because irrigated land is already wet, it may be less able to absorb rainfall. Runoff from irrigated croplands during a storm can thus be heavier than runoff from unirrigated areas, carrying sediment and any farm chemicals into water bodies.
- *Destruction of the soil structure.* Possible structural collapse during irrigation of soils with low structural stability. Soil structure can be dramatically and rapidly degraded by irrigation. Soil strength decreases rapidly with increasing water content so that wet soil is generally more vulnerable to structural damage from mechanical stresses or disturbance.
- *Human health.* On one hand, irrigated agriculture can improve human health through greater food security, better nutrition, improved local infrastructure and higher incomes that allow access to medicines and health services. On the other hand, irrigation also supports many waterborne diseases in both humans and animals, including malaria, schistosomiasis, dengue, bancroftian and lymphatic filariasis, river blindness, roundworm, tapeworm, guinea worm, yellow fever, sleeping sickness, cholera, typhoid, hepatitis and leishmaniasis.

- *Water quality.* As mentioned earlier, irrigation can affect downstream water quality by reducing the amount of water available to dilute contaminants and by potentially increasing agrochemical pollution.
- *Impacts on ecosystems.* Diverting water for irrigation leaves less for downstream ecosystems, including wetlands, mangroves, and coastal estuaries. Discharge water from irrigated fields may contain more salt, less dissolved oxygen, more pollutants, and a heavier silt load than the incoming flow.
- *Socioeconomic impacts.* Although irrigation is usually introduced to improve economic conditions and support development, it may wreak social and economic havoc. New irrigation schemes can disrupt communal land-use rights and highlight discontinuities between traditional and legal land rights. Individual water rights may need to be negotiated, particularly for small plots. As land becomes more productive it may be taken away from women by men for their own use, exacerbating gender inequalities.
- *Cumulative and area wide impacts.* Before creating a new irrigation project, it is crucial to consider the cumulative impacts of other water needs in the watershed.

3.4.5.2 LIVESTOCK WATERING POINTS AND IRRIGATION SUPPLY PONDS

Livestock access to watercourses. Livestock that have free access to watercourses may impact both the water quality and the land bordering the watercourse (the riparian area). Impacts can include: direct deposit of urine and manure into the water; deposit of manure onto low land that is seasonally flooded or where it can be washed into a watercourse; spawning bed trampling; streambank trampling and siltation of the water; and removal of riparian vegetation. Livestock impacts are usually related to the duration and timing of use, the livestock density, and the nature of the watercourse.

Water reservoirs. Reservoirs are often used for multiple purposes including to supply irrigation water during dry seasons, provide power, and prevent flooding. In the Sahel, mixed use systems where household water is reused or captured for livestock purposes or irrigation is also common. Like other water diversions, reservoirs and their associated dams worsen low-flow states and add to the potential adverse impacts of reduced flooding. Creation of new reservoirs, although anticipated to be small in this case, may deprive villages of farmlands or forests. Shallow reservoirs can become clogged with weeds, impeding water flow and preventing livestock from reaching drinking water. Reservoirs may also be breeding grounds for vectors carrying diseases like malaria, schistosomiasis (bilharzia) and river blindness.

Loading water bodies with nutrients encourages algal blooms, which deplete life-giving dissolved oxygen and harm aquatic life and fisheries. These conditions are most severe in shallow and slow-moving water bodies, such as reservoirs and low-flow-regime rivers. Reservoirs may also become anaerobic (i.e., lacking oxygen) near the bottom due to decaying organic matter. When organic matter decomposes under these anaerobic conditions, the process yields hydrogen sulfide, methane and ammonia, all of which are poisonous to humans and aquatic organisms.

Reservoirs and irrigation canals can also be used for aquaculture and as bird habitats. Aquaculture in canals can help to control weeds while providing a source of protein and income.

Bird sanctuaries and wildlife parks can be established around reservoirs to protect wildlife and stabilize shorelines against overuse and erosion.

3.4.6 BUSINESS DEVELOPMENT AND FINANCE

3.4.6.1 INVESTMENT BY THE PRIVATE SECTOR

Improved inputs and innovative technologies in agriculture processing, storage, and marketing. The building of better business models through strengthening linkages and creating models for organization among and between farmers, traders, exchanges, and small and medium enterprises (SMEs) has implications on long-term natural resource management and sustainability. Most notable is the environmental soundness of farm-level agricultural practices given the potential for significantly increased demand. The increase in demand could lead to the expansion of agricultural lands and contribute to deforestation or continued environmental degradation, in addition to the other associated impacts of agriculture. By coupling the actions to efforts for sustainable resource conservation and linking farmers to higher quality services, much of the environmental impact will be ameliorated. However, failure to create these connections and build them into learning and capacity building objectives may result in accelerated environmental harm, on-farm, at the farm gate or in processing.

Private sector support for enterprise development. An increase in agricultural financing and private sector support for inputs has the potential to impact NRM and environmental health (e.g., through expanded use of inputs [fertilizers, pesticides] and mechanization [power tillers, water pumps, etc.]).

The development of the agricultural inputs value chain, including identifying and relieving bottlenecks to marketing of agricultural inputs, presents a range of potential negative impacts, as determined by the particular input. The increased availability of various pesticide inputs can lead to the mishandling and misuse/ misapplication, presenting a profound risk to human and environmental health. While less potentially harmful to human health, the misuse of fertilizers presents distinct risk to the natural environment, with ground and surface water resources most vulnerable to 'nutrient loading' through over-application and poor management of agricultural run-off.

Genetically Engineered (GE) Seeds. Agricultural inputs may also entail the use of improved seed varieties which may have potential impacts on biodiversity by outcompeting other local varieties. The use of improved varieties classified as Genetically Engineered is also tightly controlled by USAID, and specific impacts are captured by the USAID-required biosafety procedures (see ADS 211).

3.4.6.2 LIVELIHOOD DIVERSIFICATION THROUGH CASH GRANTS

There is the potential that some of the livelihood activities influence the socioeconomic dynamics, natural resource management, and the environment, leading to increased land degradation, intensification of agriculture, low agricultural productivity, water pollution, food insecurity, and poverty. To ensure environmental and livelihood sustainability, there is need to balance the need for alternative livelihoods and economic diversification and environmental objectives while contributing to sustainable poverty alleviation. This requires supporting a shared responsibility for sustainable resource and environmental management among various

stakeholders. Environmental screening of activities is to be undertaken through the grants per the conditions noted in Section 5.

3.4.6.3 DEVELOPMENT CREDIT AUTHORITY (DCAs)

Actions to be supported by DCA-backed loans may cover the full range of actions across agricultural value chains. As such, the actions supported could have multiple impacts, as described above, for any agricultural program or other economic sector. Impacts are likely to be particularly significant when loans support (see associated impacts in corresponding section):

- Procurement of pesticides
- Expansion or construction of agro-processing operations, including abattoirs
- New land conversion
- Establishment or expansion of concentrated animal feeding operations
- Larger-scale aquaculture

3.4.7 INFRASTRUCTURE AND CONSTRUCTION

3.4.7.1 GENERAL CONSTRUCTION, REHABILITATION, AND UPGRADING

Construction itself has a well-known set of potential adverse impacts, which spans across nearly all types of construction, rehabilitation, and upgrading (e.g., housing structures, warehouses, health clinics, market infrastructure, agricultural markets, etc). They include the following:

- *Disturbance to existing landscape/habitat.* Construction typically necessitates clearing, grading, trenching and other actions that can result in near-complete disturbance to the pre-existing landscape/habitat within the plot or right-of-way. If the plot or right-of-way contains or is adjacent to a permanent or seasonal stream/water body, grading and leveling can disrupt local drainage.
- *Sedimentation/fouling of surface waters.* Runoff from cleared ground or materials stockpiles during construction can result in sedimentation/fouling of surface waters, particularly if the site is located in close proximity to a stream or water body.
- *Standing water.* Construction may result in standing water on-site, which readily becomes breeding habitat for mosquitoes and other disease vectors.
- *Occupational and community health and safety hazards.* The construction process

and construction sites present a number of hazards: fall and crush injuries, hazards from hand or power tools and equipment used in construction, and exposure to hazardous

Note: In the absence of complicating factors; USAID AFR Bureau has concluded that very small-scale general construction involving a total “disturbed area” of less than 1000m² is of its nature very unlikely to create significant adverse impacts. In general, the potential impacts of facilities construction and operation somewhat larger than 1000m² are controllable with basic good design and operating practices. However, the precise nature of the potential impacts—and the appropriate design and operating practices to mitigate them—are highly dependent both on location and the specific characteristics of the infrastructure. This requires a site-specific, design-specific assessment of potential adverse impacts and the efficacy of available mitigation measures.

substances, such as solvents in paint, cement dust, etc.

- **Increased demand for water and production of sewage, manure, and waste waters.** Community structures where people, livestock, or agricultural products are gathered are likely to locally increase the demand for water and sanitation facilities. For example, on market day, the need for toilets, fresh water, and areas to pen animals increase. Likewise, the amount of manure and sewage will increase on those days, and without adequate systems, groundwater and surface water can be contaminated, dust can be significant, and health hazards from zoonotic and diarrheal disease can increase.
- **Increased air and noise pollution** can result during construction or rehabilitation from the actions of construction equipment and workers.
- **Adverse impacts of materials sourcing.** Construction requires a set of materials often procured locally: timber, fill, sand and gravel, bricks. Unmanaged extraction of these materials can have adverse effects on the environment. For example, stream bed mining of sand or gravel can increase sedimentation and disturb sensitive ecosystems; or purchase of timber from unmanaged or illegal concessions helps drive deforestation.
- **Use, storage and disposal of toxic materials.** Numerous toxic chemicals play a significant role in construction industry. These may vary depending on the type of construction. Termiticides and preservatives are used to treat wood. They can extend the life of wood and reduce waste of forest resources, but if improperly used may leach into nearby soils or water and touching treated wood may leave residues on exposed skin.
- **Use of burnt bricks.** Burnt (fired) bricks are a major cause of deforestation in Africa. The demand for burnt bricks in the construction industry has stimulated a huge demand for hardwood for burning the bricks. This demand is most severe in peri-urban areas.

3.4.7.2 ROADS

Rural Road Rehabilitation and Maintenance. Road works has a well-known set of potential adverse impacts.

- **Roads share in full measure the general construction impacts discussed above.** Due to the volume of material used and the large total disturbed area, road borrow pits/materials sourcing present special concerns, as do the potential for sedimentation of surface waters and disruptions to drainage patterns. Road machinery is among the more hazardous equipment used on construction sites.
- **Operation/ use.** Once road repairs have been completed, increased traffic can bring with it more noise as well as additional adverse social impacts (i.e. increased crime, spread of communicable diseases, etc.)
- The establishment of a road near a natural reserve or park and the development of road

Note: In the absence of complicating factors, USAID AFR Bureau has concluded that very small-scale general rehabilitation of rural roads (i.e. involving a total of less than 10 km) is of its nature unlikely to create significant adverse impacts of any kind. Rehabilitation larger than this scale (or construction of new roads of any size) does typically present the risks that the impacts described above could be significant.

traffic could disrupt wildlife and cause many species to migrate. There are also risks of accidents on wild animals.

- **Maintenance.** The impacts of road maintenance are similar to those as general construction where roads may need to be filled, graded, cleaned or the shoulder cut/mowed for safety purposes. Deferred maintenance not only compounds costs for later rehabilitation but can also be dangerous to motorists and pedestrians because of increase in accidents and tendency to drive off the road onto the shoulders to avoid potholes and broken road sections. Potential environmental impacts associated with borrow pits include dust generation, noise pollution, material sourcing, and surface water runoff. These have impacts on surface water, air quality, detriment to the soundscape both for fauna and nearby residents, and habitat destruction.

3.4.8 HEALTH

3.4.8.1 WASTE MANAGEMENT

Healthcare waste management. Although healthcare actions provide many important benefits to communities, they can also unintentionally do harm via poor management and disposal of the wastes they generate. These wastes generally fall into three categories in terms of public health risk and recommended methods of disposal:

- **General healthcare waste.** Similar or identical to domestic waste, including materials such as packaging or unwanted paper. This waste is generally harmless and needs no special handling; 75–90 percent of waste generated by healthcare facilities falls into this category, and it can be burned or taken to the landfill without any additional treatment.
- **Hazardous healthcare wastes.** Including infectious waste (except sharps and waste from patients with highly infectious diseases), small quantities of chemicals and pharmaceuticals, and non-recyclable pressurized containers. All blood and body fluids are potentially infectious as they may contain bloodborne pathogens.
- **Highly hazardous healthcare wastes.** Should be given special attention, as it includes sharps (especially hypodermic needles), highly infectious non-sharp waste such as laboratory supplies, highly infectious physiological fluids, pathological and anatomical waste, stools from cholera patients, and sputum and blood of patients with highly infectious diseases such as TB and HIV. They also include large quantities of expired or unwanted pharmaceuticals, sharps, hazardous chemicals, as well as all radioactive or genotoxic (genetically damaging or altering) wastes.

Additional health risks are related to disposal, including burning of pharmaceuticals, anatomical, and plastic medical supplies (including new or used condoms) at low temperatures or in open containers and incineration. Burning at low temperatures and improperly operated or sited incinerators can result in the release of toxic pollutants into the air. Inefficient and insecure sorting and disposal may allow drugs beyond their expiry date to be diverted for resale to the general public.

Improper training, handling, storage and disposal of the waste generated in health care facilities or actions can spread disease through several mechanisms. Disease transmission through infectious waste is an immediate threat if waste is not properly treated to destroy pathogenic

organisms, dangerous quantities of microscopic disease-causing agents—viruses, bacteria, parasites and fungi. Anatomical wastes such as excised tissue or placentas, if improperly handled, can also lead to unintended exposure to other patients or workers. These agents can enter the body through punctures and other breaks in the skin, mucous membranes in the mouth, inhalation into the lungs, or through an oral passage. Those who come in direct contact with the waste are at greatest risk. Examples include agrovets, healthcare workers, cleaning staff, patients, visitors, waste collectors, disposal site staff, waste pickers, substance abusers and those who knowingly or unknowingly use “recycled” contaminated syringes and needles. Although sharps pose an inherent physical hazard of cuts and punctures, the greater risk comes from sharps that are considered infectious waste. Healthcare workers, waste handlers, waste-pickers, substance abusers and others who handle sharps could become infected with HIV and/or hepatitis B and C viruses that remain on the surface of needles through pricks or reuse of syringes if the proper protective equipment is not worn.

Contamination of water supply from untreated healthcare waste can also have devastating effects. If infectious stools or bodily fluids are not treated before disposal, they can create and extend epidemics. The absence of proper sterilization procedures is believed to contribute to outbreaks of acute watery diarrhea and cholera in Africa during the last decade.

3.4.8.2 PHARMACEUTICAL MANAGEMENT AND STOCKOUTS

Environmental impacts from health commodities management can include contamination of surface water, land, and local ecosystems if health commodities are improperly managed or disposed. Health impacts to the surrounding community may arise through weak quality assurance resulting in unintended use of defective, expired, or counterfeit commodities.

Procuring an oversupply of health commodities increases the probability of products expiring on the shelf and requiring disposal. With higher disposal requirements, damaged and expired pharmaceuticals create a larger waste stream of potentially hazardous waste and associated environmental impacts. Disposing a large amount of pharmaceuticals also creates greater entry points of pharmaceuticals to be diverted from the waste stream into the community for improper and possibly hazardous consumption. There are also risks associated with procuring or accepting donated health commodities that are defective, expired, or counterfeit which may lead to public health impacts due to the potential of these commodities being unsafe and/or ineffective if used by consumers.

Improper storage of health commodities can result in damage to pharmaceuticals due to the failure to meet storage condition requirements, theft through inadequate security, damage from pests, and hazards such as fire. In addition, equipment used to operate the storage facility (e.g., mobile equipment, chillers, air circulation systems, fuel storage tanks, etc.) should be properly maintained to prevent accidents or spills from occurring that may lead to health or environmental impacts.

Pharmaceutical waste, including human and veterinary pharmaceuticals, may also accumulate due to inadequacies in stock management and distribution, and lack of a routine system of disposal. The effects of pharmaceutical waste in the environment are different from conventional pollutants. Drugs are designed to interact within the body at low concentrations to elicit specific biological effects in humans which may cause biological responses in other organisms. There

are many drug classes of concern, including antibiotics, antimicrobials, antidepressants, and estrogenic steroids. Their main pathway into the environment is through household use and excretion, and through the disposal of unused or expired pharmaceuticals. Likewise, some pharmaceuticals can be excreted in animal products such as milk and overuse of pharmaceuticals can contribute to antibiotic resistance.

The effects on aquatic life are a major concern in the disposal of pharmaceuticals. A wide range of pharmaceuticals have been discovered globally in fresh and marine waters. Even in the smallest quantities some of these pharmaceutical compounds have the potential to cause harm to aquatic life.

3.4.8.3 HEALTH SERVICE DELIVERY AND CLINIC OPERATION

Health clinics of small-scale (generally less than 1000 m²) will have impacts similar to those detailed for general construction above. However, health clinics have unique and specific impacts in their operation.

- *Waste stream generation.* In operation, general/institutional facilities and compounds generate a set of waste streams (e.g. gray water, latrine discharge, solid waste). In general, if improperly managed, such wastes can contaminate ground and surface water and create breeding habitat for disease vectors. For example, failure to design or maintain appropriate drainage structures can result in standing water within the compound or on adjacent land. Local erosion, including damage to adjacent fields, and sedimentation of nearby surface waters can also result. The risks of inappropriate waste management are the same as those noted for latrines; however, these discharges are of particular concern in health facilities because of the (1) higher likelihood that infectious diseases may be present in human excreta, (2) vulnerability of patient populations to poor environmental health conditions, and (3) amount of pharmaceuticals potential passed through excreta.
- *Expansion of services and increased demand on resources.* In actions intended to improve or expand delivery of health care services, the main environmental impact is the increased demand for water and energy. These demands can overcome local water availability, leading to poor sanitation and hygiene practices, or even conflicts when water must be shared with the local community. Energy requirements may be met by charcoal or timber cut locally, contributing to deforestation. Additionally, if the clinic operates an incinerator, diesel may be spilled during operation. Also, the toxic ash from the incinerator also can contaminate soils and waterways as well as pose a risk to human health.

3.4.9 AGRICULTURE

3.4.9.1 GENERAL AGRICULTURE DEVELOPMENT SUPPORT

Land conversion and change of landscapes. Clearing of land for agricultural production actions can contribute to change and fragmentation of landscape isolating animal populations and altering microclimates at forest edges. Agricultural actions can contribute to deforestation,

grassland degradation, encroachment into marginal lands, such as hills, wetlands, shallow lakes, and protected areas and adversely impact biodiversity and natural habitats.

Impacts on all live organisms. Changes in natural habitat and use of agricultural inputs including toxic substances has impact on all live organisms including on people's health.

Loss of vegetation. Agricultural actions and home gardens may lead to the expansion or creation of additional agricultural lands, potentially through the clearing of forests or brush. Clearing of pristine or fully-grown forest can result in increased erosion, loss of biodiversity, decreased rainwater infiltration into aquifers, and increased soil temperatures. Where agricultural lands are expanded, vegetative strips may be destroyed or non-existent. Vegetative strips offer significant ecosystem benefits to farm systems especially in reducing wind speeds, serving as a barrier to pests, capturing overspray of pesticides, creating buffer to surface water systems to capture fertilizer, pesticides, and irrigated water runoff among others.

Introduction of non-native species. Unconsidered introduction of crop, mono-cropping, agroforestry and cover crops, hedges, and windbreaks, riparian buffers and other intentionally introduced non-native species that are new to a given ecological zone present risks that the species will be disruptive or invasive. Introduced exotic species may spread diseases, out-compete native species for resources, become feral, act as predators or pests, or interbreed with native species.

Soil erosion. Unsustainable practices—such as badly managed open-furrow agriculture, crops grown in the wrong way or place, deforestation, or draining wetlands—can all cause soil erosion. As the soil erodes, less rainfall is absorbed and the excess runs off. This runoff removes the fertile topsoil necessary for crop production and can have serious off-site consequences, including gully formation, landslides, siltation and sedimentation of water bodies, downstream flooding, and damage to productive infrastructure. Wind erosion can have significant impact on soil erosion in many areas.

Reduction in soil fertility. Soil fertility is dependent on three major nutrients (nitrogen, phosphorous and potassium), various trace elements, and organic matter content. A productive soil contains sufficient quantities of each of these elements, which are slowly removed by repeated cropping without adding fertilizers; leaching due to rainfall; short fallow periods; and burning of crop residues. The subsequent decline in soil fertility often occurs in conjunction with soil erosion, with each problem exacerbating the other.

Siltation of water bodies. Eroded topsoil is carried by runoff into water bodies. Once in the slower-moving water, the soil settles, altering the terrain, water depth and water clarity, which can harm fish and bottom-dwelling populations. Siltation can intensify downstream flooding by reducing channel capacity and can also fill the upstream areas behind a dam. One remedy for siltation, dredging, is an expensive process that must be repeated at intervals. Siltation in wetlands and coastal areas can reduce productivity and marine populations. Large-scale siltation impairs shipping and river transport, flood control, the efficiency of dams, fisheries and aquaculture, urban sewage treatment, and drinking water supplies.

Reduction in water quality. Incorrect application of agrochemicals, fertilizers or manures can migrate from a farmer's field to local water sources, causing environmental harm and adversely

affecting human health and actions.⁶⁴ Nutrients from fertilizers can also cause nutrient loading in local water bodies, resulting in degraded water quality, reduced wildlife, fish and mollusk populations, and toxic algal blooms. Moreover, such reductions in water quality can impact other uses of water bodies as well, such as drinking water, sanitation, fishing, aquaculture, recreation and tourism, and other farms.

Reductions in surface & groundwater quantity. Excess extraction of water for irrigation from shallow or deep wells, or from river diversion can reduce the quantity of surface or groundwater, with adverse impacts on ecosystems, downstream users, and other users of the aquifer.

3.4.9.2 AGRICULTURAL INPUTS FOR CROP PRODUCTION

Irrigation. Irrigation presents a set of risks associated with construction of irrigation systems, water intake, conveyance, distribution and application. The risks may include poorly constructed irrigation systems, over-extraction of water, salination/permanent degradation of irrigated soils, and, contamination of surface and groundwater with agro-chemical run-off.

Seed and planting materials. Growers often use or purchase poor quality seed and planting materials from uncertified sources. Using low quality seed and planting materials can have a negative effect on crop yield and waste agricultural inputs. Seedborne fungal pathogens can cause detrimental diseases of crops.

Fertilizer. Fertilizer impacts vary depending on the type and application of the fertilizers. Some fertilizers have dual action as pesticides. Impacts may include:

- *Surface water and groundwater contamination.* Over-application can lead to runoff into surface waters or leaching into groundwater particularly in sandy soils. Even small amounts of over-application of phosphorous can lead to harmful algal blooms in waterways which reduce oxygen and kill instream fauna.
- *Human health hazards.* Touching some fertilizers with bare hands may cause skin irritation, and ingesting it may be poisonous. Inappropriately stored fertilizer is a health hazard. Phosphorous fertilizers also commonly contain cadmium which is toxic to humans. Children exposed to contaminated water may develop blue-baby syndrome or methemoglobinemia.
- *Crop damage.* Application at inappropriate times is not only wasteful but can damage crops. Fertilizer burn is defined as leaf scorch resulting from over-fertilization, usually referring to excess nitrogen salts.
- *Greenhouse gas emissions.* Fertilizer mismanagement can also contribute to greenhouse gas emissions as soil microbes in areas of application produce nitrous oxide. Manure used as fertilizer also releases gases continuously into the climate; however, in under fertilized areas, fertilizer may contribute little to emissions.

⁶⁴ The impacts of pesticides on the environment are discussed in USAID's Sector Environmental Guidelines available at <http://www.usaidgems.org/bestPractice.htm> in the agriculture, pesticides, and IPM sector chapters.

- *Acidification.* Nitrogen fertilizers can also contribute to soil acidification. Acid soils have lower availability of trace elements and can affect the development of nitrogen fixing legumes.

Pesticides. Use of pesticides can result in serious health implications to human health and contamination of the environment. There is now overwhelming evidence that pesticides pose a potential risk to humans and other life forms and unwanted side effects to the environment. Pesticide poisoning can cause deaths and chronic diseases. Pesticides can pollute the tissues of virtually every plant and animal life form on the earth and every natural resource including the air, water, soil and sediment in rivers. The high-risk groups exposed to pesticides include agricultural farm workers, but pesticides also affect agricultural food consumers and the public that is exposed to pesticides in the environment, for example, through inadequate notification of pesticide application.

3.4.9.3 TRAINING DEMONSTRATIONS OF AGRICULTURAL PRACTICES INCLUDING EXTENSION

Extension services are critical information resources for farmers and agents and are extremely influential in teaching techniques and influencing local farmers. Extension services can be diverse in nature including production in traditional agriculture, soil and water conservation measures, livestock and animal husbandry, and aquaculture. Extension programs that apply a “package” of new approaches and technologies over large, diverse areas result in sub-optimal or even incorrect techniques for parts of the range of conditions. While extension services provide information, their instruction has direct impact on the physical practices farmers utilize. The agents likely do not have direct control on what the farmers do with their knowledge, but the extension services can promote environmentally sound and climate resilient interventions. Maladaptive or inappropriate farming techniques, promoted by extensions, can have an environmental impact that is broad from over application of fertilizer, soils loss, water contamination and drawdown of aquifers. These impacts would be similar to those for general agriculture.

Certain controlled pilot studies may have very limited environmental impact due to the controlled scale and monitoring of the activity, and only those with controlled parameters and monitored regularly are excluded from further analysis. However, actions which serve as demonstration sites or pilots with the intent to disseminate practices can have a much broader reaching, cumulative impact. If the pilot’s impact is not carefully identified and measures taken to transfer the skills to mitigate impact in translation projects, there can be far reaching and multiplicative environmental damage.

Inappropriate siting of pilot studies or demonstration projects can lead to significant adverse impacts. For example, if sited in protected areas, substantially intact forests, or other valuable ecosystems, the land clearance itself can have significant adverse impacts. Siting too close to streams or water bodies increases substantially the risk of contaminating surface water resources with agrochemicals. While unlikely to be significant at small scale, these impacts scale as the physical size of these facilities increase.

Overall, the set of crops and practices to be promoted through demonstration and pilot are specifically intended to be more productive and profitable in the near term, and more *sustainable* than the typical, current practices they seek to replace or augment. That said, these actions can have impacts addressed in sections above.

3.4.9.4 PROVISION AND MULTIPLICATION OF SEEDS, SEEDLINGS, AND NURSERIES

Seed diversification, multiplication, and quality assurance. Seed diversification and quality assurance involve technical assistance and capacity building to improve the seed certification and multiplication system to make it of higher quality and more consistent. The activity is expected to have a positive impact on the environment in that it will increase productivity on agricultural lands potentially resulting in less need to clear land for production if done in combination with comprehensive land use management. The activity also may reduce the number of non-target seeds or off-specification seeds in seed lots, and therefore, reduce the amount of non-native or exotic seeds sown onto fields.

Actions addressing seed multiplication are directed toward quality control and not multiplication itself. Commercial seed multiplication involves the operation of seed farms, often irrigated, and almost always involving use of fertilizers and pesticides (agro-chemicals). Seeds are typically pesticide-treated. The use of agro-chemicals, particularly in the context of irrigation (fields used for seed replication are often irrigated), presents a set of concerns outlined for general agricultural actions.

Nursery operations typically entail the use of pesticides, fertilizers and irrigation. The scale is smaller than the acreage involved in field crops or agroforestry schemes themselves, but the use of inputs may be concentrated, presenting a set of concerns outlined in general agricultural impacts.

3.4.9.5 HOME GARDENS

While on a smaller scale, backyard gardens may have similar, yet more localized, environmental impact to larger scale agricultural actions. However, with adoption across the entire landscape by each household, the aggregate impacts may be significant without appropriate measures in place. While not every household has funds for inputs such as fertilizers, insecticides, and seed, some will, and therefore, the impacts of these efforts must be mitigated as they pose a threat to water quality, biodiversity, and human health. Additionally, support for gardens may promote land clearing and the conversion of forests to agricultural land. Burning of vegetative matter to serve as fertilizer is also a traditional practice which contributes to air pollution and potentially deforestation as well as strips the soil of long term carbon matter and nutrients. Soil erosion and surface water contamination are common concerns for agricultural actions of all types. Use of pesticides in home gardens can be of particular concern as garden plots are located near homes and pesticides can be present on the skins of fresh vegetables and fruits.

3.4.9.6 POST-HARVEST STORAGE PRACTICES AND HANDLING

Agribusiness enterprises, particularly agricultural processing, can be the source of significant adverse environmental impacts. Assistance that increases the scale or number of such enterprises in the absence of such practices will tend to result in/increase these adverse impacts. Various food processing, handling, storing and packaging operations create wastes of different quality and quantity, which, if not treated, could lead to increasing disposal problems and severe pollution problems. Additionally, if not recovered by appropriate technologies for upgrading, bioconversion and reutilization, food processing wastes can represent a loss of valuable biomass and nutrients.

Solid waste production. Processing will likely result in the generation of organic wastes and potentially inorganic wastes. Properly processed, solid wastes can be converted into organic fertilizers. Hulls from shelling or off-casts from milling are solid wastes that must be handled appropriately. Spoiled products may need to be disposed and could be hazardous for human or animal consumption (e.g., aflatoxin contamination).

Generation of liquid waste. Liquid wastes from food washing and processing contain significant quantities of organic and inorganic matter. These wastes, if improperly disposed, can generate standing water that will become a breeding ground for disease vectors and can create pockets of pollution when reaching groundwater and surface water. The impact on the water will depend on wastewater characteristics. Generally, water pollution can result in changes in pH and temperature, increased nitrogen and phosphorus load that leads to eutrophication and more long-term problems because of organic compounds and heavy metals that are discharged.

Energy consumption. Processing, storage and transportation of agricultural produce requires energy and all energy consumption has impact on the environment. Equipment such as pumps that are of poor quality have lower energy efficiency. Certain power sources, such as diesel generators, generate greenhouse gases and local air and noise pollution.

Pesticide use for protection of stored commodities, fumigation of commodities. As stated above, use of pesticides can result in serious health implications to humans and contamination of the environment. Structural use of pesticides can pose significant risk to applicators and bystanders if not done properly and escaped fumigants can cause illness and death of workers and the public.

Workers' health and safety. Farmworkers and post-harvest food processors are exposed to numerous safety, health, environmental, biological, and respiratory hazards. These include heat exposure, falls, musculoskeletal injuries, hazardous equipment and machinery, unsanitary conditions, pesticides, and many others.

3.4.9.7 CLIMATE-SMART WATER USE AND SOIL CONSERVATION/FERTILITY MANAGEMENT

Largely, climate smart practices are complementary to environmental safeguards and may serve as mitigation measures for environmental impacts. However, climate smart is not always environmentally sound and the practices must be considered separately. While increased fertilizer application may make crops more resilient to water stress because they are healthier, over-application of fertilizer or fertilizer application may still result in adverse impacts as described above. Additionally, reliance on groundwater for irrigation may be considered a means for adapting to climate threats; however, necessary analysis for environmental sustainability and impact must still be included to evaluate potential for draw down of the aquifer as well as potential conflict associated with groundwater access points, and salinization of irrigated soils.

3.5 SOCIAL IMPACTS ASSOCIATED WITH PROJECT ACTIONS

As a best practice of Environmental Impact Assessment, the impacts of project actions on social systems and beneficiaries should also be considered. The general intent of development outcomes are by design, intended to have positive impacts on social systems and individuals; however, there is the potential that some actions may have unintended negative social consequences if not properly screened and mitigated. The RISE II portfolio generally addresses

these issues in its holistic approach to integrative project design; however, a screening of potential unforeseen social impacts is discussed here. Where actions have social impacts arising directly from an environmental issue (e.g., siting of boreholes in agro-pastoralists zone), mitigation measures are recommended in Section 5.

Governance of natural resources, land tenure, and land management are topics which may have important implications for social equity and mitigation of conflict in Burkina and Niger. Actions which have associated social considerations to be addressed as part of implementation are summarized below (Table 3).

TABLE 3. SOCIAL IMPACTS SUMMARY OF RISE II ACTIONS

Action	Summarized Impacts and Recommendations
<p>Land use, land rights, and land management:</p> <p>Create and enhance land use management plans by leveraging local conventions</p> <p>Support for inclusive property rights</p> <p>Organizing communities and creating land right movements and organizations</p>	<p>In the Sahel, land has traditional and formal rights or uses that are sometimes in conflict because the capacity of the resources to meet the needs of stakeholders is limited, the access to the area is in dispute, or because traditional and new economic growth plans for the area have different objectives. Access to land by youth and for households headed by women are also frequently an issue contributing to unrest and marginalization of those groups. If land planning or designation of rights, are not developed in an inclusive manner, the action can contribute to conflict and undermine success of the activity. Additionally, the selection of and participation in consultations or community planning groups may be favorably or unfavorably viewed by community members. Influential people may try to exclude or include those that will contribute to the organization in their favor. Therefore, careful selection and protections for participants and an atmosphere where participants can honestly communicate their opinions is important. On the other hand, in favorable conditions, the composition of the consultation groups should also be representative of the target beneficiaries.</p>
<p>Governance and management of resources:</p> <p>Improve governance of natural resources</p> <p>Platforms for reducing conflict over resources</p> <p>Facilitate the clarify roles and responsibilities and enhancing capacities to effectively implement host country policies</p>	<p>Allocation or identification of governance over any resources, particularly natural resources, is a sensitive subject as many resources are communal, have local rights that must be considered, or are contested among the target beneficiaries.</p> <p>As with land rights, the participation in groups or consultation meetings when developing management or governance schemes, may be favorably or unfavorably viewed by community members. Therefore, protections for participants and an atmosphere where participants can honestly communicate their opinions is important. On the other hand, in favorable conditions, the composition of the consultation groups should also be representative of the target beneficiaries.</p> <p>Even with stakeholders' suggestions, the outputs should carefully consider in light of impacts to the physical environment or potential to</p>

Action	Summarized Impacts and Recommendations
<p>Organizing communities and agricultural and pastoralist associations</p> <p>High value assets such as boreholes and irrigation system</p>	<p>enhance social marginalization through overexploitation, contamination, and discrimination.</p> <p>Development and management of physical assets and resources can also have possible issues with marginalization of certain populations over access to the assets. This may potentially lead to incidents or conflicts amongst user groups. In the case of water rights, boreholes and irrigation systems, conflicts may span borders with countries sharing watercourse having potential conflicts over user rights. Large-scale irrigation from a river or a lake shared by several countries could cause incidents/conflicts between neighboring countries if there is no prior agreement.</p>
<p>Health:</p> <p>Deliver mobile outreach for family planning</p> <p>Increasing access and quality to RMNCAH and nutrition services</p> <p>Expand coverage and increase utilization of high impact health interventions</p> <p>Health services generating anatomical waste</p>	<p>Family planning often involves difficult discussions that are affected by the family dynamics and local social norms. The cultural and religious context should be taken into account in the discourse to avoid social unrest.</p> <p>Working to increase access to quality health services must consider local and cultural contexts of the community.</p> <p>Increasing the utilization of health services works toward behavior change and communication. These methods must be tailored to the cultural context.</p> <p>Certain anatomical waste such as placentas or foreskins can carry important cultural significance. The cultural practices of the area should be considered when selecting disposal methods.</p>

4.0 ENVIRONMENTAL DETERMINATIONS

4.1 RATIONALE FOR RECOMMENDED ENVIRONMENTAL DETERMINATIONS AND SUBSIDIARY REVIEW

This section sets out the logic and rationale used in this Programmatic IEE for recommending threshold determinations and deferrals, and for requiring development of the Supplemental IEE and subsidiary review. Upon approval, recommended determinations become affirmed, per 22CFR216 and specified conditions, detailed in Section 5, become mandatory obligations of implementation per ADS 204. These conditions will be reiterated in the development of activity-level Supplemental IEEs.

Categorical Exclusions are recommended for actions that are (1) clearly within the categories of actions identified by 22 CFR 216.2(c)(2) as being eligible for categorical exclusion (Table 4); and (2) have no foreseeable direct or indirect environmental impacts. Where identified, these actions will not be considered further. However, actions must still be monitored to assure that (1) they remain within the scope of the categorical exclusion, and (2) there are not unforeseen impacts.

TABLE 4. CATEGORICAL EXCLUSIONS PER 22 CFR 216.2(C)(2)

Actions Category	Summarized Impacts	Threshold Determination
Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment	None	216.2(c)(2)(i)
Controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas (pilot testing, except GEs)	None	216.2(c)(2)(ii)
Analyses, studies, academic or research workshops and meetings	None	216.2(c)(2)(iii)
Projects in which USAID is a minor donor to a multi-donor project	None	216.2(c)(2)(iv)
Document and information transfers;	None	216.2(c)(2)(v)
Nutrition, health care or population and family planning services except to the extent designed to include activities directly affecting the environment (such as waste generation)	None	216.2(c)(2)(viii)
Matching, general support and institutional support grants provided to PVOs to assist in financing programs where USAID's objective in providing such financing does not require knowledge of or control over the details of the specific activities conducted by the PVO	None	216.2(c)(2)(xiii)
Studies, projects or programs intended to develop the capability of recipient countries to engage in development planning, except to the extent designed to result in activities directly affecting the environment	None	216.2(c)(2)(xiv)

Negative Determinations are recommended for actions that meet BOTH the following:

1. The actions are NOT within the classes of actions eligible for categorical exclusion; AND
2. one of the following applies:
 - a. they have no foreseeable adverse impacts;

- b. they are mitigation measures for other actions;
- c. they have foreseeable adverse impacts, but these are not significant and appropriate mitigations are already built into their design or specification; or
- d. they have foreseeable adverse impacts, but these are not significant and are also indirect, with mitigation beyond the control of USAID.

For such actions (and as detailed in the general conditions), the action must be implemented as designed (i.e. inclusive of any mitigation measures included in the design), and that if unexpected impacts are observed during action implementation, appropriate corrective action will be taken and the Agreement/Contracting Officers Representative (A/COR) and MEO notified.

Negative Determinations with Conditions are recommended for actions which, based on the impacts analysis, are highly unlikely to result in significant adverse impacts. This includes instances in which the impacts of the unmitigated action could be significant, but technically straightforward, easily monitorable, and mitigation as specified by the condition(s) will reliably prevent impacts from becoming significant. Conditions are those requirements or specific mitigation measures applicable to the project planning, implementation, and operation. Conditions are detailed for these actions in Section 5.

As a condition, some actions may require **subsidiary review** in the form of an Environmental Review Form (ERF) and associated Environmental Review Report (ERR) (<http://www.usaidgems.org/subsidiary.htm>) due to sub-grants or sub-awards being used. IPs or their sub-grantees, must complete and submit the ERF/ERR to the A/COR for each subject action, prior to implementation of the action. The ERF/ERR will be approved by the A/COR and the MEO. Actions subject to this form of subsidiary review are those which:

- a. **the general nature or potential scope of the actions for which the ERF will be used is known** at the time the IEE is written (e.g. small infrastructure rehabilitation, training and outreach for a specified purpose, etc.).
- b. **these actions will be executed under a grant or subproject component of a parent project/program.** The ERF cannot be used in lieu of a request for categorical exclusion, IEE or IEE amendment when new actions/components are to be added to existing projects, programs or sector portfolios.
- c. of their general nature, **foreseeable adverse environmental impacts are small or easily controllable with BASIC MITIGATION TECHNIQUES that can BE SUCCESSFULLY IMPLEMENTED BY FIELD STAFF.**
- d. of their general nature, the **actions are NOT large-scale.**

Positive Determinations. A positive determination is associated with actions that have a significant impact on the environment, or those actions which by regulation per 216.2(d), generally have a significant impact on the environment. Examples include river basin development, agricultural land leveling, irrigation and water management projects, resettlement, penetration road building, etc. Actions outside of these specific categories may also receive a positive determination based on an understanding of the scope and breadth of the action at the time that the IEE is drafted. Actions with a positive determination may opt to draft a **Supplemental IEE or Scoping Environmental Assessment** to gather more information on the

action, as recommended by best practice. The threshold determination for the action may be downgraded to a negative determination based on the recommendation of this additional review. Otherwise, the action should proceed to a full **Environmental Assessment** prior to irrevocable commitment of funds.

Deferrals. A deferral of a threshold determination is recommended for actions for which there is not enough information on location, actions, or scope of actions available at the time of drafting this Programmatic IEE to make a threshold determination. Deferrals must be cleared (i.e. a threshold determination must be approved via a Supplemental IEE or amendment) prior to irreversible commitment of funds to that action. Specific requirements of the Supplemental IEE are noted in Table 5 for some actions with deferrals. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.

4.2 CLIMATE RISK MANAGEMENT

4.2.1 SUMMARY

Per ADS 201, all Strategies, Projects, and Activities must be screened for climate risks. The CRM screening of this PAD was undertaken by USAID/SRO staff, in collaboration with USAID/AFR, USAID/Niger, and USAID/Burkina Faso, and it is documented in Annex A. The CRM process was initiated early in PAD development to ensure that climate risks, opportunities and risk mitigation options could be fully integrated into the overall technical approach. Given that USAID/SRO does not have a Country Development and Cooperation Strategy (CDCS), and that RISE II is largely meant to build resilience to the climate-sensitive and complex nature of the target zones, USAID/SRO designed the CRM screening as an iterative process that continued throughout PAD development. USAID/SRO felt this was important given the integrated nature of the program, especially as many sub-IRs could be negatively affected by upstream climate impacts that are best addressed through activities spread across several Development Objectives (DOs). The CRM process also served to cross-check implicit assumptions embedded within the Results Framework on climate risks and climate risk mitigation strategies, and to identify next-level assessments and analysis needs.

4.2.2 INTRODUCTION

Like all countries in the Sahel, Niger and Burkina Faso are both significantly affected by current climate variability (e.g., inter-annual and decadal scale variations in rainfall, cyclic droughts) and are expected to be among the countries most negatively affected by climate change (e.g., increasing temperatures, more variable rainfall, increased extreme events such as droughts and floods). At the same time, neither country has contributed significantly to the main cause (i.e., the emission of greenhouse gases) of climate change.

As many of the shocks and stresses experienced in Niger and Burkina Faso are climate-induced, climate risk mitigation strategies have been included within the core design of the RISE II program. Furthermore, these climate shocks and stresses affect people in multifaceted and differentiated ways. Therefore, RISE II was designed such that each DO supports and complements the others to ensure both up- and downstream climate risks are addressed through multiple interventions. For example, droughts are not only addressed through increased

risk management in DO1 and through more drought resilient livelihoods and increased access to insurance in DO2. These risks are also addressed through downstream interventions in the health sector (e.g., health systems strengthening (DO3)) and improved flexibility in governance (DO4). The resilience approach adopted in RISE II will help ensure that climate risks do not undermine the program's objective of helping people achieve a sustainable pathway to self-sufficiency.

4.2.3 PROCESS AND RESULTS

As noted with the associated with CRM tables, CRM will continue throughout activity design and implementation as the specific activities are identified and executed. The CRM screening was initiated through a series of in-depth meetings with each DO technical team soon after the Results Framework was completed (i.e., December 2017), but before the DO narratives were fully developed. During these initial meetings, USAID/SRO, in collaboration with USAID/AFR, used USAID's CRM screening tool to guide discussions. The results of these discussions were recorded in google sheet versions of the tool to allow collaboration across operating units. Once draft tables were completed, down to the sub-Intermediate Result (IR) level where possible, they were circulated to field staff in Niger and Burkina, to ensure the analysis was comprehensive and incorporated local knowledge and context.

While project implementation is expected to last 5 years, it was agreed that a 15-20 year timeframe would be considered for the CRM screening to ensure the resilience outcomes of RISE 2 would not be quickly undermined by future climate risks. This is especially important owing to the cyclic nature of the climate in the Sahel, including the presence of a significant decadal signal. It is widely known that it is not a matter of if a drought will happen, but when such a drought will occur.

Through the screening, almost all IRs and sub-IRs were found to experience moderate to high risk from climate variability and change. However, given the context-specific nature of how different climate risks will materialize (i.e., actual risks will depend on gender, livelihood, socio-cultural/economic circumstances, proximity to water, topography, etc.) it was often neither possible to identify the exact risks nor to determine the most effective mitigation strategies at this stage of the program cycle. Therefore, while illustrative risks, potential opportunities, and possible risk mitigation strategies were identified, additional analysis and consideration will be necessary at the activity and implementation phases for most sub-IRs.

Given the nature of the RISE II program, many of the climate risk mitigation strategies discussed during the screening (e.g., climate smart agriculture, access to finance, access to safety nets, early warning systems, more robust health systems, improved governance) had already been considered and included in the design of the Results Framework. However, even these risk mitigation activities were found to be at moderate to high risk from climate in at least two ways. First, many of these activities need to be right-sized for the local context and climate event (e.g., insurance schemes must account for the full envelope of seasonal variations) and changes in historical patterns owing to climate change can render them ineffective if they are improperly designed. Second, if a large enough shock occurs (e.g., a large-scale, Sahel-wide drought), many of these strategies will decrease (or cease) in effectiveness. For example, many

climate smart agriculture practices have a threshold in terms of precipitation under which they will be effective, and beyond that threshold the costs of implementing such practices exceeds the benefits.

Even though many climate risks and climate risk mitigation strategies had already been considered during and included in the project design, the CRM process was still found to be valuable as it cross-checked implicit assumptions embedded within the Results Framework and identified next-level assessments and analysis needs. For example, it was understood that different climate smart agriculture practices will be appropriate for different agro-ecological zones, and thus additional analysis will be necessary once the exact areas of intervention are identified. Furthermore, while CRM screening is often conducted on specific objectives or activities, and thus identifies sector specific actions, this was not the case with RISE II. In fact, the CRM analysis reinforced the concept embedded within RISE II that resilience can only be built through a holistic approach, and thus CRM must be addressed across objectives and not just within them.

Outlined below is a high level summary of the climate risks and opportunities identified, as well as the conceptual approach the project takes to mitigate their impact.

4.2.3.1 SHOCKS AND IMPACTS FOR DOS/ SECTORS

The target areas in Niger and Burkina Faso have a mostly hot, semi-arid climate characterized by very high temperatures year-round; a long, intense dry season from approximately October–May; and a brief, irregular rainy season linked to the West African monsoon. Mean temperatures range from 20°–37°C, with significantly hotter temperatures during the months of April to September. Temperatures tend to peak in May and June, just before the rainy season starts.

Mean annual rainfall varies significantly from year to year and decade to decade as well as geographically within each country and regions within a country. Annual rainfall is typically lower in the northern areas (200–400 mm) than in the south (500–900 mm) of the Sahel. This geographical trend in rainfall has significant implications for livelihoods, as many agricultural crops cannot grow with less than 300 mm of rain. The length of the rainy season ranges from one to two months in the north to four to six months in the south. In the winter (November–March), the dry, dust-laden Harmattan trade winds blow from the northeast to the southwest; these induce desert-like weather conditions (i.e., low humidity, very little cloud cover, no rainfall) and can produce severe dust/sandstorms.

In the 1970s and 1980s, the Sahel region experienced one of the most dramatic droughts observed in the 20th century, with a 30–40 percent decrease in rainfall. With the declining rainfall, agroclimatic zones shifted south by 100–200 km. This drought had huge impacts on livelihoods across the Sahel, including in the target zones. However, it also resulted in the creation of several regional bodies tasked with improving management of climate shocks and stresses, particularly their impacts on food security, across the Sahel (e.g., Permanent Interstate Committee for Drought Control in the Sahel [CILSS], AGRHYMET). Although the Sahel, including the target zones, has seen a recovery in rainfall since the 1980s accompanied

by an apparent northward shift in crop production zones, annual rainfall has not returned to pre-1960s levels. Additionally, the recent rainfall events appear to be less frequent and have a shorter duration with greater intensity. Average temperatures have increased by about 0.6°–0.8°C between 1970 and 2010 – slightly higher than the global average.

Of particular concern to the RISE II target zones are periodic droughts. While it is impossible to predict in what year the next drought will occur, based on historical records it is likely that RISE II will be impacted by at least one drought, with the occurrence of a large-scale drought a distinct possibility. Such a large-scale drought (or even consecutive smaller-scale droughts) has the potential to overwhelm local management capacities and risk mitigation strategies. Therefore, RISE II must not only build resilience to a growing range of climate scenarios (e.g., high and low rainfall years, periodic small-scale drought, increasing flooding), but it must also be flexible enough to effectively address the changing needs and capacities that materialize during significant droughts.

Current studies suggest that temperatures will rise by between 1.8° and 2.6°C by 2050, with maximum warming during the summer months. There is less certainty associated with how rainfall patterns will change due to high inter-annual variability and the complex climate systems that drive rainfall in the Sahel. However, it is generally accepted that temporal (i.e., inter-annual) and spatial variability will increase, seasonal rainfall will become less predictable, and more rain will fall in a fewer number of larger scale events. The expected increase in extreme rainfall events (i.e., as a result of more rain falling in a few number of events) will increase the frequency and magnitude of floods in some areas. Furthermore, studies suggest that an increasing probability of a drier rainy season (i.e., owing to increased inter-annual variability) combined with increasing temperatures will increase the frequency and magnitude of droughts.

4.2.3.2 IDENTIFIED CLIMATE RISKS

The CRM screening focused on primarily on two climate stressors (i.e., increasing temperatures and increasingly variable and unpredictable seasonal rainfall) and two primary shocks (i.e., increased flooding and the increased frequency and magnitude of drought). It is important to note that three of these shocks and stresses (i.e., seasonal rainfall, flooding, drought) are related to both climate variability and change. These shocks and stresses have the potential not only to negatively affect most RISE II interventions, but to result in differentiated and multifaceted impacts across the target zones and populations. For some RISE II interventions the main climate risks will be associated with direct threats (e.g., floods can wash away irrigation infrastructure, reduced rainfall can limit agricultural productivity, increasing temperatures can limit crop productivity), while other interventions are more at risk from upstream drivers (e.g., the ability and willingness of some people to afford health services may decrease when a drought negatively affects rainfed agriculture, and their primary livelihood). Therefore, in order to build a sustainable pathway to self-sufficiency, RISE II was designed to address climate risks in a holistic manner across all interventions. Direct threats from each shock and stress are addressed below, followed by a brief discussion of upstream drivers.

Variability and unpredictability of rainfall. Most people in the target zones derive their livelihood from water and rain dependent activities (e.g., agricultural, pastoralism), and thus are

already at risk from the significant inter-annual variation in rainfall that occurs in the Sahel. This risk is likely to be exacerbated by an increase in variability and unpredictability. Significant inter-annual rainfall variations drive the need for increased risk management across the target zones, as well as act as a direct threat to water resources management. If inter-annual variations in rainfall and water availability are not appropriately managed, both land degradation and localized conflict can be more likely to occur, resulting in cascading negative effects across the target zones. Inter-annual rainfall variability is a particular threat to rainfed agriculture, where productivity depends on both the amount and timing of rainfall. While a number of risk management strategies exist to address this variability, the effectiveness of these strategies is limited to a range of variability that may be exceeded as the climate changes. Unpredictable and variable rainfall can also decrease the productivity of pastoralism (e.g., through a decrease in the availability of natural fodder), and depending on the water source, irrigated agriculture. Decreasing availability of fodder can interact with decreasing productivity of rainfed agriculture to increase tensions between farmers and pastoralists, which can further reduce agricultural and pastoralist productivity. Changing rainfall patterns can act as both a direct threat and an upstream driver of negative impacts in the health sector. For example, rainfall variability affects the timing and prevalence of certain disease burdens (e.g., malaria, cholera), as well as having a direct impact on the accessibility of nutritious foods. While inter-annual rainfall can have significant upstream impacts on governance, its direct threats are limited. As with all the shocks and stresses, how changes in rainfall will impact people depends on socio-cultural realities, local context, and geography (e.g., proximity to a water source, topography).

Flooding. Not only is rainfall expected to become more variable and unpredictable, when rain does fall, it is expected to do so less often and during extreme events. More rainfall in more limited events is likely to lead to increased flooding under some circumstances and in some geographies. An increasing frequency and magnitude of flooding will threaten to overwhelm underdeveloped flood warning systems, as well as wash away water management infrastructure. Furthermore, floods can wash away cropland, and less frequently, livestock, negatively affecting livelihoods. Flood-induced land and crop loss may affect women and youth disproportionately as they are often given more marginal lands. Floods can also wash away poorly sited infrastructure (e.g., irrigation, schools, storage facilities, roads) that prevent people from being able to access markets, health facilities, as well as RISE II implemented trainings and capacity building activities. Such flooding effects are likely to be significant, but limited both spatially and temporally.

Increasing temperatures. Increasing temperatures have both near term (e.g., changes in disease burdens, increased heat stress) as well as longer-term (e.g., exceedance of crop tolerance thresholds) effects. Where appropriate, such impacts are considered within RISE II. For example, the potential shift in the viability of certain crops (e.g., maize) and livelihoods (e.g., farming) in some parts of Burkina Faso and Niger owing to increasing temperatures need to be considered in the context of longer term resilience. However, the longer term temperature increases will allow for more opportunity to adapt. Therefore, while it is unlikely rising temperatures will have a large direct impact on RISE activities, the program seeks to ensure that the systems being supported are sustainable and realistic under future climate conditions.

Drought. The biggest climate risk to the people living in the target zones, and thus to RISE II, is drought, both localized and large-scale. While droughts have and will continue to occur periodically across the Sahel, most studies suggest their frequency and magnitude are likely to increase. As noted previously, the massive drought during the 1970s and 1980s had effects that are still felt today, 40 years later. Given the water dependence of most livelihoods in the target zones, droughts can have wide ranging and long-lasting impacts. Many of these impacts are similar to those discussed under interannual rainfall variability. For example, drought will significantly decrease water security, especially away from the major river systems. It also has the potential to result in increased land degradation (as people resort to mal-adaptive activities to survive) and increased potential for conflict over increasingly limited resources. While RISE II envisions improved risk management, these systems can be overwhelmed by a large enough drought or consecutive smaller scale droughts. For example, while social capital is one of the most effective means people have to cope with a drought, such capital is limited and can be used up during significant events. The most noticeable effects of a drought are those associated with the decrease in the productivity of rainfed agriculture and pastoralism (which often drive the negative coping mechanisms mentioned above that lead to increased land degradation). Drought can also act as a direct threat to access to finance and insurance by overwhelming poorly designed or limited approaches. While poorly understood, drought is likely to have a significant impact on migratory patterns, both temporary and permanent. While pastoralism is a drought risk mitigation strategy that has been practiced in the Sahel for generations, the growing realities in both Niger and Burkina Faso now limit its effectiveness. Even irrigated agriculture and gardening are at risk if the drought is large enough. Drought also acts as a direct threat to the health sector by increasing the prevalence of certain diseases as well as reducing the availability of nutritious foods and potable water. Even in good rainfall years some people in target zones have to skip meals during the lean season. Decreased intake of calories during droughts can lead to significant health problems, and even death.

Upstream Driver. While climate acts as a direct threat to many RISE II interventions, it also acts as an underlying driver of upstream risks to others. For example, when agriculture and pastoralism become less productive, people are more likely to migrate, making it more difficult for them to access health services or for governance structures to operate effectively. Similarly, if climate negatively affects livelihoods, reducing income, people may become less willing or able to pay for health services or engage productively in local governance. Furthermore, when livelihood opportunities and income decrease, the ability of local governments to raise revenue will also decrease. At the same time, the need and demand for health services and local government support are likely to increase during climate stresses. As the local capacity to manage significant shocks in the target zones is limited, outside support is often required. However, such support, if poorly implemented, can undermine local governance structures and/or decrease the incentives for local government to be transparent and accountable. While still highly uncertain, changes in the climate regime is likely to produce winners and losers, which may lead to a break down in local cooperation, particularly between farmers and pastoralists.

To be effective, RISE II must build resilience through and across all its interventions. For example, the use of climate information and early warning systems (DO1) in conjunction with an increase in the access to finance, insurance, and improved agricultural practices and markets

(DO2) can help increase productivity and income (DO2), which can help ensure that people have the resources and willingness to seek health services (DO3) and participate in sub-national governance (DO4). At the same time, interventions to improve health services that take into account the climate sensitivity of diseases in the Sahel (DO3) will positively affect the ability of people to engage in productive livelihoods (DO2) and sub-national governance (DO4).

As noted above, the differentiated risks from climate to men, women, and youth (DO5) need to be considered in all interventions. This is especially important as climate shocks and stresses (whether direct threats or underlying drivers) will materialize differentially among different populations and locations. These differentiated risks can be the result of local context (e.g., topography, soil conditions), socio-cultural circumstances (e.g., gender, age) or governance frameworks (e.g., tenure systems). Perhaps more often, these differentiated risks will be the result of complex interactions among a variety of local and contextual characteristics. Therefore, there is not a single best approach to building resilience, but activities need to be tailored to the local context and sub-population. For this reason, this CRM screening has identified the need to conduct further analyses at the activity design and implementation phases of the program cycle. Only through these more localized analyses can the differentiated risk be identified and addressed.

Even as RISE II seeks to build resilience to shocks and stresses, it must be acknowledged that a significant shock (e.g., a large-scale drought, a significant market shock) could occur that overwhelms the systems being strengthened. If such a shock were to occur, RISE II may have to reallocate resources to ensure that the targeted populations do not slip into negative coping strategies. Therefore, instead of assuming that a significant climate event will not occur during project implementation (as many other PADs and CDCSs do), RISE assumes and prepares the possibility of a massive shock occurring to ensure that the target populations continue on a path toward self-sufficiency.

4.2.4 CONCLUSION

As designed to date, the RISE II program is, broadly, a climate risk mitigation program. Through the explicit consideration of climate risks within and across DOs, RISE II seeks to build resilience in a holistic manner in a fragile and climate sensitive region. By addressing upstream (e.g., underlying drivers) and downstream (e.g., direct threats) climate risks through multiple interventions, RISE II will work to ensure that the systems (e.g., agricultural, finance, health, governance, early warning) being supported are more robust, and thus better able to manage climate shocks and stresses. However, as differentiated climate risks occur across the target zones and populations, further analysis is needed at the activity and implementation phases of the program cycle. Embedded within the program framework is a shock response mechanism, which will allow RISE II to detect and respond to a shock that could overwhelm local capacity. Therefore, RISE II takes a holistic approach to climate risk management that is robust across temporal and spatial scales, as well as across the magnitude and frequency of the potential shocks and stresses.

5.0 CONDITIONS AND MITIGATION MEASURES

In Table 5, conditions and specific mitigation measures are provided by intervention category. These conditions are based on available information at the time of this environmental analysis. These measures will be moved forward to the activity EMMP or into other subsidiary or supplemental review as specified. USAID will ensure that the IP further develops and completes the EMMP based on project work plans. The mitigation measures proposed below are the minimum standards to be applied and in most cases, are expected to be developed in further detail in the EMMP.

Social Impacts. Where social impacts are present, best practice mandates that they be addressed along with environmental impacts. Social impacts are discussed in Section 3.5 and the recommended mitigation measures associated with those impact are described in Section 5. Partners are responsible for responding to the recommended mitigation measures in a format and manner agreed upon by their A/COR. The measures must be implemented and will include reporting/verification measures regarding implementation.

TABLE 5 MITIGATION MEASURES FOR ACTIONS WITH ENVIRONMENTAL IMPACTS (I.E., ACTIONS WITH NEGATIVE DETERMINATION WITH CONDITIONS OR WITHOUT CONDITIONS)

* Actions that are categorically excluded are not addressed here, except where ambiguity of detail exists for the action.

INTERVENTION CATEGORY A. NATURAL RESOURCE MANAGEMENT (NRM) AND MIXED NRM

Summary: Inclusive of farmer managed natural regeneration, agroforestry, water and soil conservation management measures, reclamation, forestry, and watershed protection.	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Farmer-managed natural regeneration (FMNR), soil and water conservation measures, including tree/bush/grass planting (both native and non-native), compost, zai pits and demi-lunes (larger pits), fencing, erosion control and infiltration rock walls. <i>(These actions are expected to be low cost and low technology interventions).</i></p> <p>Plantings and land reclamation actions, including vegetative buffers, cover plantings, nurseries, and wind blocks.</p> <p>Agroforestry</p> <ul style="list-style-type: none"> • Production of lumber and forest products • Crop and fodder production <p>* Actions involving livestock production will abide by the</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Development of local FMNR, agroforestry, and capacity building for soil and water conservation and plantings must address issues of sustainable use of natural resources and implementation of appropriate techniques/ best practices in accordance with mandatory references for best practice: USAID Sectoral Guidelines for CBNRM http://www.usaidgems.org/Sectors/cbnrm.htm; Sectoral Guidelines for Forestry http://www.usaidgems.org/Sectors/forestry.htm; and Sectoral Guidelines for Dryland Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_DrylandAgriculture.pdf 2. When applicable, Supplemental IEEs should indicate requirements for site-specific subsidiary environmental review will be implemented using the AFR ERF/ERR process (available at: http://www.usaidgems.org/subsidiary.htm). When used, the ERF/ERR must be reviewed and approved by the A/COR, MEO, and REO prior to implementation of the action. The awardee/IP must assure implementation of any environmental mitigation and monitoring conditions specified by the approved ERF/ERR. 3. For actions on communal lands, local authorities (including traditional authorities) will be involved, to ensure local authorization and agreement with the action. 4. For actions disseminated to farmers with minimal direct oversight by experts or IPs, a well-developed manual for implementation and maintenance, planned and overseen by a forester or agronomist, will be developed. 5. The capacity of NRM Committee (or similar) and communities to implement NRM practices will be

Summary: Inclusive of farmer managed natural regeneration, agroforestry, water and soil conservation management measures, reclamation, forestry, and watershed protection.

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>conditions listed in Intervention Category B.</p> <p>* Actions involving construction will abide by the conditions for small-scale infrastructure in Intervention Category H.</p> <p>*Actions involving seed multiplication and seed/seedling provision will abide by the conditions for seedlings in Intervention Category I.</p>	<p>strengthened by training the committee in governance and maintenance.</p> <ol style="list-style-type: none"> Species selection will include consultation with a qualified forester, agronomist, or biologist, in order to avoid creating problems with invasive species. The provision/distribution, promotion of, and training in use of fertilizers must conform to best practices outlined in the Africa Bureau Fertilizer Fact Sheet (http://www.encapafrica.org/egssaa/AFR_Fertilizer__Factsheet_Jun04.pdf). The procurement or promotion of, or training in use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a Pesticide Evaluation Report Safer Use Action Plan (PERSUAP) is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place (see Section 6 for special limitations). <p>Recommended Social Mitigation Measure: The choice of species promoted for plantings or natural regeneration will be made with consideration of the interests of the local community.</p>
<p>Development and support of natural products value chains</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> When applicable, Supplemental IEEs should indicate requirements for site--specific subsidiary environmental review will be implemented using the AFR ERF/ERR process (available at: http://www.usaidgems.org/subsidiary.htm). The ERF/ERR must be reviewed and approved by the A/COR, MEO, and REO prior to implementation of the action. The awardee/IP must assure implementation of any environmental mitigation and monitoring conditions specified by the approved ERF/ERR. Development and support of value chains based on natural products will incorporate cleaner production and waste energy and water minimization best practices, in accordance with mandatory references for best practice: USAID Guidelines for Micro and Small Enterprises: http://www.usaidgems.org/sectorguidelines.htm.

Summary: Inclusive of farmer managed natural regeneration, agroforestry, water and soil conservation management measures, reclamation, forestry, and watershed protection.

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>Recommended Social Mitigation Measure: The IP should specifically address how the risks and benefits of adopting non-sustainable harvesters/production techniques within the selected value chains will be controlled and limited. The proposed mitigation measure for the value chains must be developed in a consensual way with communities, and then, with the community's agreement, placed into the Local Convention.</p>
<p>Small-scale NRM infrastructure construction, maintenance, rehabilitation or upgrading of:</p> <p>Groundwater recharge structures (e.g., trenches, catchments, pits)</p> <p>Flood control structures – weirs, check dams, (see below for flood walls)</p> <p>Storm water management infrastructure (e.g., diversion channels, inception ditches)</p> <p><i>“Small-scale” construction without complicating factors for NRM structures are defined as those that:</i></p> <ul style="list-style-type: none"> • <i>Do not involve displacement of existing settlement/inhabitants</i> • <i>Are not in a protected area</i> • <i>Do not disturb area of more than 1,000 sq meters</i> 	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. When applicable, Supplemental IEEs should indicate requirements for site--specific subsidiary environmental review will be implemented using the AFR ERF/ERR process (available at: http://www.usaidgems.org/subsidiary.htm). The ERF/ERR must be reviewed and approved by the A/COR, MEO, and REO prior to implementation of the action. The awardee/IP must assure implementation of any environmental mitigation and monitoring conditions specified by the approved ERF/ERR. 2. If an action is high risk, the action will continue to the development of a Supplemental IEE, as directed by the A/COR and MEO. The Supplemental IEE must be fully cleared prior to commencing the action. 3. Those actions, having no complicating factors (see left) will incorporate the following mitigation measures: <ul style="list-style-type: none"> • Will follow best practices including USAID Sectoral Guidelines for Construction http://www.usaidgems.org/Sectors/construction.htm <p>At a minimum, where applicable, mitigation measures to be implemented include:</p> <ul style="list-style-type: none"> • Consultation with an engineer for the construction of contour rock dams/terraces and impoundments • Use of leveling technology to ensure correct bund and drainage works. • Create standardized checklists for construction, monitoring, and maintenance. • Consult with and engage the village management committee to ensure correct functioning and maintenance of the systems. • Obtain authorization for the construction from all necessary authorities, including traditional authorities.

Summary: Inclusive of farmer managed natural regeneration, agroforestry, water and soil conservation management measures, reclamation, forestry, and watershed protection.

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<ul style="list-style-type: none"> • <i>Do not create an impoundment or catchment greater than 100m³.</i> • <i>Do not involve a weir or check dam > 1m tall.</i> • <i>Less than \$250,000 total cost</i> 	<ul style="list-style-type: none"> • Borrow pits will be rehabilitated (mechanically and biologically) to limit erosion. For backfilling, a borrow pit will be used, and excavations will be superficial and not deep. • Utilize living structures, (e.g., live fences and cover cropping) to protect structures from erosion, stabilize loose soils, and prevent water logging. • No materials will be mined from streambeds. • Work will be limited to the area required (no un-used land will be cleared). • The capacity of a community NRM committee will be strengthened by training the committee in governance and maintenance.
<p>Medium or large-scale NRM infrastructure construction, maintenance, rehabilitation, or upgrading, (or with complicating factors as determined by the criteria immediately above) of:</p> <p>Flood walls</p> <p>Groundwater recharge structures (e.g., trenches, catchments, pits)</p> <p>Flood control structures – weirs, check dams</p> <p>Stormwater management infrastructure (e.g., diversion channels, inception ditches)</p>	<p>Deferral. Resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p> <p>For construction in the presence of complicating factors (see complicating factors for small scale construction above), the conditions and process are outlined in USAID ADS 201maw Mandatory Reference – Construction Risk Management.⁶⁵ The Construction Risk Management (ADS 201maw Mandatory Reference) provides guidance on screening for construction actions that constitutes construction. Any new construction actions must address conformance with, or variation from, each of the principal elements within USAID's preferred approach to construction (Construction Risk Management: ADS 201maw Mandatory Reference). The screening should be organized to describe actions taken, or planned, to mitigate construction risk at different stages of action implementation: Planning, Engineering Design, Construction Procurement, and Implementation. The Agency's preferred construction approach is considered the 'least risky' approach for construction implementation and serves as the benchmark for required construction risk screening. Nevertheless, for a variety of programmatic, pragmatic and/or contextual reasons, it may be necessary to deviate from this preferred approach. The operating unit must identify, analyze and evaluate the additional risk accrued through variations from the preferred approach. The operating unit must include the construction risk screening conclusion (or overall risk rating) in the project files.</p>

⁶⁵ Construction Risk Management: A Mandatory Reference to ADS 201. October 2017. Available at: <https://www.usaid.gov/ads/policy/200/201maw>.

Summary: Inclusive of farmer managed natural regeneration, agroforestry, water and soil conservation management measures, reclamation, forestry, and watershed protection.

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Improve water management at the local level through promotion of efficiency and optimizing allocation practices.</p>	<p>Negative Determination: NO CONDITIONS for environmental impacts as this action serves as a mitigation measure for impacts to water resources by promoting long-term sustainability of water resources in balance with community and ecosystem needs by maximizing water use efficiency and minimizing water quality impacts from wastewater discharges and erosion and nutrient/agrochemical runoff. However, due to potential social impacts, the IP must implement, monitor, and report upon the following mitigation measures in a format agreed upon by the A/COR and MEO.</p> <p>Recommended Social Mitigation Measure: Water allocation is critical for life in the Sahel. Because efficiency can mean that certain user groups have to alter their traditional water uses or quantity, conflicts may arise. Prior to altering water allocations, a social impact analysis should be developed by the IPs taking into account local power dynamics and inequalities.</p>
<p>Create and enhance land use management plans by leveraging local conventions, including addressing land rights and tenure issues in management plans</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Land use planning must integrate or otherwise reflect current data and analysis on environmental trends, including principles of sustainable NRM and global climate change (GCC) adaptation strategies. Data and analysis may be drawn from USAID, other bilateral donor agencies, International Financial Institutions, Multilateral Development Banks, or other internationally recognized research or development entities. 2. Land use planning should incorporate best practice standards in land tenure, property rights and natural resources, including addressing animal migration and feeding corridors and encroachment of agricultural fields in an attempt to address sustainability and reduce human-animal conflict. 3. No new protected areas or pristine ecosystems will be proposed for clearing as part of the planning, unless deemed absolutely necessary. 4. Implementation of new economic zones and land uses must include capacity building of customary land holding groups consistent with good practice guidelines and address issues of sustainable land use and management, social impacts of land use planning, and environmental soundness. See the USAID Sector Environmental Guidelines on Agriculture (http://www.usaidgems.org/Sectors/agriculture.htm) and Community-Based Natural Resource Management http://www.usaidgems.org/Sectors/cbnrm.htm.

Summary: Inclusive of farmer managed natural regeneration, agroforestry, water and soil conservation management measures, reclamation, forestry, and watershed protection.

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>Deferral. For support to <u>implement</u> land use plans in protected or pristine areas. However, creating or improving such plans falls under the previous negative determination with conditions. Resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p> <p>Recommended Social Mitigation Measure: Make all reasonable efforts to prevent or mitigate adverse economic consequences on local communities or individuals due to plan recommendations, including from loss of usual and customary use of resources. Conduct inclusive planning actions to address conflicts between groups.</p> <p>Training and sensitization of communities on land rights will integrate cultural realities and take into account proper management of sensitive issues in order to avoid social conflicts.</p>
Build capacity and communicate roles and responsibilities of stakeholders in land management, inclusive management, and resource governance	<p>Negative Determination: NO CONDITIONS for environmental impacts as this action supports mitigation measures for indirect impacts of other actions (i.e., better natural resource management through inclusive stakeholder engagement and capacity building). However, due to potential social impacts, the IP must implement, monitor, and report upon the following mitigation measures in a format agreed upon by the A/COR and MEO.</p> <p>Recommended Social Mitigation Measure: Include conflict sensitive messaging in land management capacity building.</p>
Introduce and implement watershed headwater exclusions zones	<p>Negative Determination: NO CONDITIONS for environmental impacts as exclusion zones have no environmental impacts as designed. However, due to potential social impacts, the IP must implement, monitor, and report upon the following mitigation measures in a format agreed upon by the A/COR and MEO.</p> <p>Recommended Social Mitigation Measure: Consider local or traditional access rights and uses before implementing exclusion zones.</p>

INTERVENTION CATEGORY B. RANGELAND MANAGEMENT AND LIVESTOCK PRODUCTION/ MANAGEMENT

Summary: Inclusive livestock production, fodder and feed production, animal nutrition, veterinary services, animal product processing, brush clearing, and fire management

Actions/Interventions	Recommended Determination and Condition(s), as applicable
Livestock production	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IPs engaged in livestock production actions will follow best practices and assure implementation of environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for Livestock available at: http://www.usaidgems.org/Documents/SectorGuidelines/Livestock%20Guideline%20Final_w_GCC_Addition_May19.pdf; USAID Sectoral Guidelines for Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_Agriculture_2014.pdf; USAID Sectoral Guidelines for Dryland Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_DrylandAgriculture.pdf. 2. Livestock production and increased diversity of livestock holdings must be informed by assessments of carrying capacity of rangeland, impact on biodiversity, soil health, feed requirements and forage production, availability of water resources, access to veterinary services, waste management capacity, GHG considerations and social impacts, including potential conflicts over access to private or communal natural resources. The assessment results will provide input for the planning of interventions. 3. IPs engaged in actions of intensification of livestock production or leading to intensification of livestock production will integrate their actions with actions aimed at improved rangeland management, feed management, and water resources management. These complementary actions may be implemented by a different IP through a collaboration arrangement. 4. The IPs will implement water access management options for protection of drinking water sources and riparian protection (e.g. use of alternative water sources, herding, manure disposal, and fencing). These complementary actions may be implemented by a different IP through a collaboration arrangement. 5. The project will introduce practices aimed at minimizing GHG emissions (e.g. improved animal nutrition, manure management, pasture management).

Summary: Inclusive livestock production, fodder and feed production, animal nutrition, veterinary services, animal product processing, brush clearing, and fire management

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>6. No new breeds will be introduced without careful review and coordination by a trained specialist and in consultation with relevant Government ministries and institutions as required by host country regulations.</p> <p>Recommended Social Mitigation Measure: IPs will conduct a consultation with stakeholders prior to initiation of livestock intensification or fodder production involving shared community resources.</p>
<p>Livestock/poultry feed management, promotion of balanced livestock/poultry diet, promotion and introduction of improved feed, and introduction of new fodder species</p> <p>Also see Intervention Category I for agriculture for cross-cutting issues</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IPs engaged in livestock/poultry feed management and promotion and production of feed will follow best practices and assure implementation of environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_Agriculture_2014.pdf; USAID Sectoral Guidelines for Dryland Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_DrylandAgriculture.pdf; and USAID Sectoral Guidelines for Livestock http://www.usaidgems.org/Documents/SectorGuidelines/Livestock%20Guideline%20Final_w_GCC_Addition_May19.pdf. 2. Introduction of new fodder crops and species which comply with conditions provided in Intervention Category I on agriculture and crop production. 3. New land will not be cleared for fodder production, but degraded land may be restored for fodder production. 4. Introduction of new feed to animals will seek to formulate rations that improve production levels, while simultaneously minimizing environmental impacts associated with excreta. 5. Support for fodder production will include training on environmentally sound practices including use of inputs, integrated pest management, and mitigating impacts on local biodiversity. 6. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use

Summary: Inclusive livestock production, fodder and feed production, animal nutrition, veterinary services, animal product processing, brush clearing, and fire management

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place. (see Section 6 for special limitations).
<p>Support or promotion of veterinary and animal health services, including recruiting, training, and supporting individuals to provide those services as well as strengthening existing service providers</p> <p>Vaccination campaigns</p> <p>Use of veterinary products</p> <p>Use of pesticides for livestock and feed production</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IPs engaged in actions directly or indirectly related to provision of veterinary services, animal health and vaccinations will follow best practices and assure implementation of environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for livestock http://www.usaidgems.org/Documents/SectorGuidelines/Livestock%20Guideline%20Final_w_GCC_Addition_May19.pdf. 2. All actions supporting veterinary actions including projects engaged in vaccination campaigns must address impacts of generation and management of veterinary waste including sharps. 3. Training of veterinary community health workers must address occupational health and safety risks in animal veterinary practice, including transmission of zoonotic diseases. 4. Sharps, hazardous and biohazardous waste and veterinary pharmaceutical waste will be disposed of in accordance with local regulations and guidelines. Individuals who are involved in the collection and removal of veterinary waste must be properly trained and use appropriate personal protective equipment (PPE). 5. The project will promote community awareness about zoonotic disease. 6. All actions associated with use of veterinary drugs must address generation of residues in animal derived products and food safety. Where veterinary drugs are addressed, promoted and introduced, actions must assess risks and develop measures to prevent contamination of soil, and bodies of water caused by veterinary medicinal products used in livestock farming. 7. Implementers will promote and use non-chemical methods for control of livestock pests where practical. 8. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use

Summary: Inclusive livestock production, fodder and feed production, animal nutrition, veterinary services, animal product processing, brush clearing, and fire management

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Dairy processing including supply of small processing equipment and training in improved hygiene practices.</p> <p>* Hygiene issues with dairy processing workers including handwashing and establishment of latrines are addressed in Intervention Category D.</p>	<p>training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place (see Section 6 for special limitations).</p> <p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IPs engaged in dairy processing actions will follow best practices and assure implementation of environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for food processing http://www.usaidgems.org/Documents/MSEs/USAID_MSE_Sector_Guideline_Food_Processing_2013.pdf; USAID Sectoral Guidelines for Dryland Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_DrylandAgriculture.pdf. 2. All actions introducing new equipment and techniques will address employee health and safety, existing capacity for operation and maintenance of equipment, access to spare parts, and the required training in operations and maintenance of new equipment. Water and energy use considerations must be integrated into introduction of new equipment, as well as consideration for management of liquid and solid waste.
<p>Range management actions including rangeland fire management, rangeland restoration, invasive species control, brush cleaning, building border fences.</p> <p><i>“Small-scale” construction without complicating factors for range management are defined as those that:</i></p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. If an action is high risk, the action will receive a Positive Determination. See Section 4.1 for follow-on requirements of a Positive Determination. Landscape scale fire management, fire breaks >1km, and burns in protected areas, are considered high risk. 2. Those actions having no complicating factors (see left) will incorporate the following mitigation measures: <ul style="list-style-type: none"> • Will follow best practices including USAID Sectoral Guidelines for Livestock http://www.usaidgems.org/Documents/SectorGuidelines/Livestock%20Guideline%20Final_w_GCC_Addition_May19.pdf and USAID Sectoral Guidelines for Dryland Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_DrylandAgriculture.pdf;

Summary: Inclusive livestock production, fodder and feed production, animal nutrition, veterinary services, animal product processing, brush clearing, and fire management

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<ul style="list-style-type: none"> • <i>Do not involve displacement of existing settlement/inhabitants</i> • <i>Are not in a protected area</i> • <i>Do not disturbed area of more than 1,000 sq meters</i> • <i>Do not build fences or fire breaks longer than 1 km.</i> • <i>Less than \$250,000 total cost</i> 	<ul style="list-style-type: none"> • Livestock's distribution within a watershed will be promoted using sound range management practices such as salting, establishing water location, herding, natural fencing, stock trails and prevention of grazing in riparian areas. • The awardee/IPs engaged in rangeland management and restoration actions will promote the development of formal or informal Sustainable Range Management Plans that incorporate strategies for offsetting the impact of livestock grazing. The plan will include rangeland management actions that will result in healthy and productive rangelands that promote healthy soils and carbon sequestration. The plans will be developed in cooperation with local communities and provision incorporated into the Local Conventions. This will include measures such as: <ul style="list-style-type: none"> ○ improving vegetation and wildlife habitat, ○ control of invasive species, ○ establishing optimal duration for grazing for plant recovery, ○ livestock grazing at a specified season, intensity, and frequency to achieve specific vegetation management goals, ○ fencing off or stabilizing water channels (natural barriers, as appropriate), ○ minimizing runoff and erosion, ○ protecting water quality and ○ addressing social issues and potential conflicts such as accounting for transhuman herders. • Localized fire management, such as early burning or fire breaks, which take place as part of typical household agricultural/livestock action or under the direction of a government ministry with the authority to do so, must have a 1) plan in place for the IPs support in the form of a Fire Management and Community Awareness Plan; and 2) promote and support the development and implementation of community and local fire management plans under Local Conventions on fire management. Fire will not be promoted as a means to capture rodents. The plan should promote: <ul style="list-style-type: none"> ○ community notification of burn periods, ○ emergency plans and contacts for fire authorities, ○ training materials for burn participants/beneficiaries, and

Summary: Inclusive livestock production, fodder and feed production, animal nutrition, veterinary services, animal product processing, brush clearing, and fire management

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<ul style="list-style-type: none">○ burn prohibition periods (e.g., during wind events) <p>3. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place (see Section 6 for special limitations).</p>

INTERVENTION CATEGORY C. FISHERIES AND AQUACULTURE

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Support of inland artisanal capture fishing practices (e.g., rivers, streams, reservoirs, impoundment, ponds, etc), including:</p> <p>Training, capacity building, and technical assistance on artisanal fishing practices</p> <p>Fisheries planning and management</p> <p>Fisheries regulation enforcement and resource governance</p> <p>Provision of artisanal fishing equipment and tools</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. All training, technical assistance, and capacity building for skills related to inland fishing practices will include best practices regarding sustainable harvesting, multiple use, and social implications of fisheries management including principles of environmental protection, social and conflict management, and sustainability. Mandatory reference: USAID Sectoral Guidelines for Fisheries http://www.usaidgems.org/Sectors/fisheries.htm. 2. Fisheries planning and management support to local or national agencies/ministries or stakeholders will include analysis of climate vulnerabilities of fisheries and climate risks to proposed management system. Additionally, planning and management will analyze the sustainability of fisheries and implications of planning and management on protected areas and non-target aquatic species. 3. The promotion of fishing as a source of protein and income generation will make all efforts to educate the target audience on appropriate and inappropriate fishing practices. 4. Active discouragement of the use of stun, dynamite, chemical, or long line fishing methods or use of bednets (insecticide or non-treated) for fishing. 5. Training and support will promote and abide by fishing regulations, including appropriate sizes and catch limits, lure types, by-catch regulations, fishing seasons, permit/license requirements, and reporting to local authorities. 6. Fishing in protected fishing areas will be discouraged unless explicitly included in a formal Fisheries Management Plan and allowed under host country regulations. <p>Recommended Social Mitigation Measure: For resource governance targeted actions, inclusive management will be promoted wherever possible. At a minimum, stakeholders will be consulted to ensure multiple or conflicting uses are addressed, access rights are considered, management is inclusive, and changes to legal or regulatory rules are communicated. Where appropriate, plans will also devise incentives to prevent illegal, unreported, and unregulated fishing.</p>

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Support for commercial capture fishing including:</p> <p>Training, capacity building, and technical assistance on the management and monitoring of commercial fisheries</p> <p>Development of commercial fishing management plans</p> <p>Commercial fisheries regulation enforcement and resource governance</p> <p>Provision of, financial support for, or investment in commercial fishing equipment and tools</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. All training, technical assistance, and capacity building for skills related to the management and monitoring of commercial fishing practices will include best practices regarding sustainable harvesting, multiple use, and social implications of fisheries management including principles of environmental protection, social and conflict management, and sustainability. Mandatory reference: USAID Sectoral Guidelines for Fisheries http://www.usaidgems.org/Sectors/fisheries.htm. 2. Active discouragement of the use of stun, dynamite, chemical, or long line fishing methods or use of bednets (insecticide or non-treated) for fishing. 3. Fishing in protected fishing areas will be discouraged unless explicitly included in a formal Fisheries Management Plan and allowed under host country regulations. <p>Deferral. For actions which involve support for the development of commercial fishing management plans or support for commercial fishing equipment and tools, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented. At a minimum, the Supplemental IEE will include:</p> <ul style="list-style-type: none"> • a description of the location of the intervention, • knowledge/data regarding sustainability of the fisheries, • identification of localized environmental impacts, and • documentation of mitigation measures.
<p>Fish habitat improvement actions (e.g., in-stream or lacustrine structures, nursery development, mangrove restoration, nearshore fishing or infrastructure to create exclusion zones)</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. While the objectives of these actions are aimed at improving environmental quality and diversity of ecosystems, habitat improvement actions that are ill-advised, poorly implemented, or are stove-piped for a single objective (e.g., increasing specific species populations) may have associated environmental impacts. Fish habitat restoration, particularly in natural waters, will: <ul style="list-style-type: none"> • Promote best management practices for environmentally sound fish habitat improvement including improving feeding, nursery, and protection areas. Best practices for natural resource

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>* Reference Intervention Category A for watershed protection actions.</p>	<p>management also generally apply. Mandatory references include: USAID Sectoral Guidelines for Fisheries http://www.usaidgems.org/Sectors/fisheries.htm; and USAID Sectoral Guidelines for Community-based Natural Resource Management http://www.usaidgems.org/Documents/SectorGuidelines/ENCAP/cbnrm.pdf.</p> <ul style="list-style-type: none"> • Not support or reward forested land or protected area conversion for fish ponds or associated facilities. • Promote the use of native species for in-stream habitat restoration and bank stabilization. • Consult with an engineer for any bank stabilization or improvement works. <p>Deferral. For actions which involve support for the development of commercial fishing management plans or support for commercial fishing equipment and tools, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented. At a minimum, the Supplemental IEE will include:</p> <ul style="list-style-type: none"> • development of a Fish Habitat Restoration Plan • evaluation of water availability and quality conditions, climate, and hydrology; • consideration upstream and downstream resource user and uses through “scale-appropriate” consultations of stakeholders across the watershed (e.g., if the interventions minimally impact flow, then local village may be the appropriate consultation extent); • description of the location of the intervention; • knowledge/data regarding cumulative impacts and alternatives analysis; • identification of localized environmental impacts, and • documentation of mitigation measures. <p>Positive Determination for actions which involve dredging, diversion of stream flow, channelization of riverine systems, or actions in protected areas, requiring preparation of an Environmental Assessment (EA) per 216.2(d).</p>

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Support for fish processing (small scale and cooperatives) – drying, scaling, etc</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Support for micro and small-scale fish processing enterprises will follow guidelines outlined by the “Food processing resource efficient and cleaner production briefing and resource guide for micro & small enterprises” http://www.usaidgems.org/Documents/MSEs/USAID MSE Sector Guideline Food Processing 2013.pdf 2. Cooperative processing centers must develop a plan for appropriate handling of fish waste that includes consideration of controlling odor, burial of non-usable fish processing wastes (scales, carcasses, etc), and securing the burial or processing site to limit human animal conflict. <p>Deferral. For medium and large-scale fish processing enterprises⁶⁶, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p>
<p>Fish health interventions – vitamins, veterinary services</p> <p>*Additions for managing aquaculture waters are found below under water treatment.</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IPs engaged in actions directly or indirectly related to provision of fish health interventions will follow best practices and assure implementation of environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for Fisheries http://www.usaidgems.org/Sectors/fisheries.htm

⁶⁶ Definitions of SMEs vary, but using employment size is common for defining enterprise size. Enterprises with 0-4 employees are micro, where 0 means owner only, 5-20 employees are small and 21-100 employees are medium. Enterprise with over 100 employees is considered large. For further detail see USAID booklet of standardized small and medium enterprises definition http://pdf.usaid.gov/pdf_docs/Pnadm845.pdf

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<ol style="list-style-type: none"> 2. All actions supporting veterinary actions must address impacts of generation and management of veterinary waste. 3. Training of aquaculture beneficiaries must include safety and prevention of the transmission of zoonotic diseases (bilharzia, erysipelotheix rhusiopathiae, salmonella, vibrio spp., mycobacterium marinum, etc.). 4. Waste and veterinary pharmaceutical waste will be disposed of in accordance with local regulations and guidelines. Individuals who are involved in the collection and removal of veterinary waste must use appropriate PPE. 5. All actions associated with use of veterinary drugs must address generation of residues in animal derived products and food safety. Where veterinary drugs are addressed, promoted and introduced, actions must assess risks and develop measures to prevent contamination in adjoining water bodies or receiving waters. 6. Implementers will promote and use non-chemical methods for controlling fish diseases and plant growth in ponds, where practical. 7. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place. (see Section 6 for special limitations). Pesticides include anti-biofouling agents (e.g. copper sulfate). Veterinary treatments, including for vitamins, are not required to comply with the PERSUAP, but should be handled appropriately and with care to limit resistance issues and to limit the detriment on other aquatic organisms.
Fish stocking and harvesting	<p>Negative Determination with Conditions, as follows</p> <ol style="list-style-type: none"> 1. GE breeds of fish will not be introduced as part of this project. 2. Systems stocked with wild fish will consult with local authorities prior to capture and stocking. 3. Fish stocked from the wild will comply with regulations and instruction of local regulations.

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>4. Infrastructure and controls will be put in place to limit the potential for farmed fish species to access natural systems, including preventing release of pond species during the draining of ponds for harvesting.</p> <p>Deferral. For actions which involve species stocked in the ponds that are a) non-endemic to a country, b) not already well established in its local waters, or c) non-endemic and well established but are the subject of an invasive species control effort, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p>
<p>Construction or rehabilitation and maintenance of aquaculture ponds or impoundments, including intensive and extensive production ponds, mixed systems for water treatment and aquaponics systems.</p> <p><i>“Small-scale” construction without complicating factors for aquaculture are defined as those that:</i></p> <ul style="list-style-type: none"> • <i>Do not involve displacement of existing settlement/inhabitants</i> • <i>Are not in a protected area</i> 	<p>Negative Determination with Conditions, as follows</p> <p>Those actions having no complicating factors (see left) will incorporate the following mitigation measures:</p> <ul style="list-style-type: none"> • Will follow best practices including USAID Sectoral Guidelines for Fisheries http://www.usaidgems.org/Sectors/fisheries.htm; and USAID Sectoral Guidelines for Construction http://www.usaidgems.org/Sectors/construction.htm. <p>At a minimum, where applicable, mitigation measures to be implemented include:</p> <ul style="list-style-type: none"> • Siting fish ponds to avoid impacting the natural environs • Use Best Management Practices in fishpond construction • Training, building capacity, and sharing information on how to incorporate environmental and social safeguards and considerations as part of fisheries management measures with beneficiaries • Ensuring technical assistance which introduces the use of new equipment or harvesting techniques must be evaluated and analyzed for their potential to generate shifts in ecosystem function and services. • Developing a decommissioning plan prior to close out and training the beneficiaries on environmentally sound decommissioning.

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<ul style="list-style-type: none"> • <i>Do not disturb area of more than 1,000 sq meters</i> • <i>Less than \$250,000 total cost</i> 	<ul style="list-style-type: none"> • Training, capacity-building and extension emphasizing that the water is NOT suitable for drinking or washing, and that children should not enter it. • No ponds financed or constructed are in protected areas. <p>Deferral. Those actions, determined to have significant possible adverse impacts or complicating factors, the deferral resolution will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p> <p>At a minimum, the Supplemental IEE will include:</p> <ul style="list-style-type: none"> • Pond siting surveys addressing site selection and design measures to prevent contamination of groundwaters from seepage, impacts to wild fish and aquatic organisms, damage to sensitive wetland ecosystems, and introduction of invasive fish species that can displace wild fish populations and degrade aquatic habitats, etc. • Construction/rehabilitation plans, operation and maintenance guides and cleaning schedules will be developed for each type of aquaculture system (e.g., intensive, mixed system, aquaponics) and submitted to the A/COR and MEO for approval prior to funding the action. These plans should address ponds cleaning and maintenance, controlling nutrients, use of fish wastes, maintaining water levels, disease control, and oxygenation. <p>Global Development Lab projects in Burkina Faso under the Integrated Aquaculture and Crop Production in Dry Lands of West Africa receive a Positive Determination per https://ecd.usaid.gov/repository/pdf/50068.pdf for construction of weirs to hold water in streams and construction of aquaculture production infrastructure.</p> <p>For construction in the presence of complicating factors, the conditions and process are outlined in USAID ADS 201 Mandatory Reference – Construction Risk Management.⁶⁷ The Construction Risk Management</p>

⁶⁷ Construction Risk Management: A Mandatory Reference to ADS 201. October 2017. Available at: <https://www.usaid.gov/ads/policy/200/201maw>.

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>(ADS 201maw Mandatory Reference) provides guidance on screening for construction actions that constitutes construction. Any new construction actions must address conformance with, or variation from, each of the principal elements within USAID’s preferred approach to construction (Construction Risk Management: ADS 201maw Mandatory Reference). The screening should be organized to describe actions taken, or planned, to mitigate construction risk at different stages of action implementation: Planning, Engineering Design, Construction Procurement, and Implementation. The Agency’s preferred construction approach is considered the ‘least risky’ approach for construction implementation and serves as the benchmark for required construction risk screening. Nevertheless, for a variety of programmatic, pragmatic and/or contextual reasons, it may be necessary to deviate from this preferred approach. The operating unit must identify, analyze and evaluate the additional risk accrued through variations from the preferred approach. The operating unit must include the risk screening conclusion (or overall risk rating) in the project files.</p>
<p>Aquaculture water sourcing, treatment, management, feeding schemes, and water amendments for aquaculture ponds</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Promotion and training will include instruction on best management practices for environmentally sound feed management, water quality control, and water and waste management. The practices should be adapted for local water availability and quality conditions, climate, and hydrology in order to prevent over-extraction, limit release of non-native species, and prevent eutrophication of natural waters. BMPs must be consistent with the principles of environmental management as detailed in the USAID Sectoral Guidelines for fisheries http://www.usaidgems.org/Sectors/fisheries.htm. 2. Aquaculture systems that rely on groundwater extraction must evaluate groundwater capacity and discharge rates to ensure sustainability as well as limit drawdown on nearby wells. Systems which rely on gravity fill must consider erosion due to overland flows in their design and mitigate the erosion impacts. 3. Pond treatment and management may require inputs for effective management including the use of herbicides, chemical applications, pH adjustments, lime or fertilizer addition. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and

Summary: Inclusive of support for artisanal fishing, commercial capture fishing, fish habitat improvement, aquaculture ponds and impoundments, rearing, fish processing, fish feed, and veterinary services and fish health, and water treatment for fish rearing

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place. (see Section 6 for special limitations). Fertilizer and lime application must promote testing of waters prior to liming.</p> <ol style="list-style-type: none"> <li data-bbox="682 443 1902 657">4. In the exchange of pond water where discharge reaches natural waters, the action must include a Discharge and Escapee Management Plan that will limit the impacts on eutrophication and reduce the potential for escapees to those natural systems. Training and capacity building in these systems should include easily recognizable indicators of when algal blooms begin and how to limit eutrophication through appropriate water and feed management, including optimizing feeding and fertilizer addition. <li data-bbox="682 678 1902 854">5. Manure, compost, or commercial feeds utilized to increase the fish production of a pond should include calculated application rates based on carrying capacity and specific fish species nutrient requirements. Additionally, mixed schemes, which utilize manure from animals reared in conjunction, should consider bank protection at the sites of pond access by the livestock and calculate flock or herd size in accordance with the target production of the pond.

INTERVENTION CATEGORY D. WATER, SANITATION, AND HYGIENE

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Construction or rehabilitation of latrines	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Construction and rehabilitation will follow applicable conditions for construction identified in Intervention Category G. 2. The awardee/IP engaged in construction and rehabilitation of latrines will follow best practices and assure implementation of any environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for Water Supply and Sanitation http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition_May11.pdf. <p>At a minimum, latrines construction and rehabilitation will:</p> <ul style="list-style-type: none"> • Ensure that the environment is free from contamination with human waste by properly siting, designing and constructing latrines to avoid discharge of chemical and microbial contaminants into the ground and surface waters. • Locate pit latrines at least 30 meters away from any water sources and the bottom of any latrine must be at least 1.5 meters above the water table. Drainage or spillage from the latrine must not run towards any surface water source or shallow groundwater source. The distances may be increased for fissured rocks and limestone, but are sufficient in fine soils. • Build elevated toilets or septic tanks, where necessary in flooded or high-water table environments, to prevent overflowing and contamination of the environment. • Ensure that latrines are properly equipped, emptied and maintained. • Ensure that users have the means to wash their hands after latrine use with soap or an alternative (such as ash), and should be encouraged to do so. There should be a constant source of water near the latrine for this purpose. (See Construction or promotion of hand washing stations action below) • Ensure that latrines are properly decommissioned, and do not leave pits open. Prior to latrine construction, adequate attention must be paid to identifying and addressing social barriers to using latrine, for example, selecting the location. Key hygiene behaviors and factors such as cultural perceptions, distance to the latrine, safety to users and community participation in cleaning and maintenance of the latrine should be addressed. Where the population has not

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	traditionally used toilets, it may be necessary to conduct a concerted education/promotion campaign to encourage their use and to create a demand for more toilets to be constructed.
Promotion of latrine construction by households	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The IP promoting household construction and rehabilitation of latrines will promote best practices in the USAID Sectoral Guidelines for Water Supply and Sanitation http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition_May11.pdf. 2. Trainings or capacity building for latrine construction will promote the following: <ul style="list-style-type: none"> • appropriate siting of pit latrines (e.g., at least 30 meters away from any water sources and the bottom of any latrine must be at least 1.5 meters above the water table). Drainage or spillage from the latrine should flow away from surface water sources or shallow groundwater sources. • avoiding flooded or high-water table environments • sourcing construction materials in an environmentally sound manner • having the means to wash their hands after latrine use with soap or an alternative (such as ash), and • properly decommission pits.
Construction or promotion of hand washing stations and soak pits	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IP engaged in construction handwashing stations will follow best practices and assure implementation of any environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for Water Supply and Sanitation http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition_May11.pdf 2. Technologies and locations of handwashing stations will be appropriate for the local context including availability of materials, water and soap. 3. The design and use of hand washing station must ensure that no stagnant water pools are generated to become a disease vector breeding ground. 4. Handwashing stations must be located very close to latrine facilities (within 1.5m of the latrine exit) to avoid the possibility of fecal-oral contamination and designed for effective use.

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>5. Where stagnant water is generated, treatment appropriate to climate and type of soil will be selected. Standing waste water generated due to poor drainage from hand-washing may need to be addressed by building a soak pit to facilitate percolation of water into the ground. In hot and dry season evaporation or use of wastewater for irrigation should be considered.</p> <p>Recommended Social Mitigation Measure: Prior to construction of handwashing station, adequate attention must be paid to identifying and addressing key hygiene behaviors. Where the population does not have proper hygiene habits, it may be necessary to conduct a concerted education/promotion campaign to create awareness about health benefits of handwashing particularly after use or maintenance of a latrine. Communities must be informed and children must receive warning where water provided for hand-washing is generally not fit for human consumption.</p>
<p>Borehole construction or rehabilitation for drinking water or household uses only</p> <p>Surface water impoundment construction or rehabilitation for household use</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IP engaged in construction of boreholes will ensure environmentally sound design by skilled professionals and actionable mitigation at every phase of construction, as provided in USAID Sectoral Guidelines for Water Supply and Sanitation http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition_May11.pdf 2. Prior to borehole drilling and water extraction, the IPs or their designated contractors, must obtain all required applicable authorizations, licenses and permits from the local authorities. 3. Water withdrawn cannot exceed recharge rates to avoid lowering the water table and decreasing yields in neighboring boreholes. The water availability must be assessed in the context of future climate scenarios (including temperature changes and rainfall conditions) over the expected life of the borehole. The design of the borehole will be altered as appropriate and adaptation measures proposed if the expected yield is insufficient over the lifetime of the borehole (e.g., watershed reforestation). A survey and/or consultation with a hydrologist may be required. 4. Boreholes must be properly sited and located away (up slope and at least 50m) from sources of contamination, such as latrines or poorly drained areas which receive contaminated run-off and away from other sources of abstraction.

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>5. Prior to drinking water provision, the project will prepare and receive approval for a Water Quality Assurance Plan (WQAP) (see USAID April 2018 Water Quality Assurance Plan Guidance). The WQAP will be prepared in consultation with the cognizant AOR/COR and/or Activity Manager. Its purpose is to ensure that all new and rehabilitated USAID-funded sources of drinking water provide water that is safe for human consumption. The completed WQAP must be approved by the A/COR and/or Activity Manager, the MEO, and the REO.</p> <p>6. Among the water quality tests which must be performed are tests for the presence of arsenic. Any USAID supported action engaged in the provision of potable water must adhere to Guidance Cable State 98 108651, which requires arsenic testing. The USAID managing team must assure that the standards and testing procedures described in the following documents are met: Guidelines for Determining the Arsenic Content of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa.</p> <p>7. Once approved, the WQAP must be implemented in full, and for the duration of drinking water actions. Implementation must include testing of water prior to making the supply point available to beneficiaries. The WQAP constitutes a key element of the project's EMMP. As with all other elements of the EMMP, project budgets, workplans, and staffing plans must provide for its full implementation. For guidelines and template for preparation of WQAP, please see: http://www.usaidgems.org/wgap.htm</p> <p>Deferral. For large-scale or municipal borehole and water systems, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p> <p>A Supplemental IEE will be prepared for large-scale boreholes including analysis of:</p> <ul style="list-style-type: none"> • supply capacity and user demands on the groundwater • siting surveys • development of an operation and maintenance plan • cleaning or shocking conditions • water quality testing parameters

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Borehole construction or rehabilitation for mixed use (i.e., potable or non-potable, household uses, livestock watering, or irrigation)	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/ IP engaged in construction of boreholes will ensure environmentally sound design by skilled professionals and actionable mitigation at every phase of construction, as provided in USAID Sectoral Guidelines for Water Supply and Sanitation http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition_May11.pdf 2. Prior to borehole drilling and water extraction IPs or their designated contractors must obtain all required applicable authorizations, licenses and permits from the local authorities. 3. Prior to construction, groundwater capacity and discharge rates must be measured to ensure sustainability as well as limit drawdown on nearby wells. The quantities of water supplied by water points to expected beneficiaries must be minimally consistent with standards set by the World Health Organization to ensure water is available at all times for personal hygiene, food preparation, cleaning, and laundry.⁶⁸ 4. Boreholes must be properly sited and located away (up slope and at least 50m) from sources of contamination, such as latrines or poorly drained areas which receive contaminated run-off and away from other sources of abstraction. 5. Prior to opening of the borehole, the project will test water in accordance with local standards, but at a minimum, tests water quality for fecal coliform and arsenic. 6. If water is potable, conditions above for potable boreholes must also be implemented. <p>Recommended Social Mitigation Measures: IPs will consult with stakeholders and community authorities to determine issues of access and natural resource governance around boreholes.</p> <p>Deferral. For large-scale or municipal mixed-use borehole and water systems, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the</p>

⁶⁸ World Health Organization's 2009 Water, Sanitation and Hygiene Standards for Schools in Low Cost Settings (http://www.who.int/water_sanitation_health/publications/wash_standards_school.pdf).

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p> <p>A Supplemental IEE will be prepared for large-scale boreholes including analysis of:</p> <ul style="list-style-type: none"> • supply capacity and user demands on the groundwater • siting surveys • development of an operation and maintenance plan • cleaning or shocking conditions • water quality testing parameters
<p>Construction of piped water distribution systems</p> <p>Construction of sand dams or subsurface dams</p>	<p>Deferral. Resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p>
Construction of communal water taps or addition of taps to existing systems	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Taps must include information on water quality and appropriate uses for the water (e.g., potable or non-potable water). 2. Information about the water quality must be made publicly available. 3. Technologies and locations associated with communal taps will be appropriate for the local context. 4. Taps must include distribution point protection measures and the design of the pad or apron must ensure that no stagnant water pools are generated to become a disease vector breeding ground. 5. Where stagnant water is generated, treatment appropriate to climate and type of soil will be selected. Standing waste water generated due to poor drainage may need to be addressed by building a soak pit to facilitate percolation of water into the ground.
Upgrades to improve reliability (water towers, water tanks, solar panels)	<p>Negative Determination with Conditions, as follows:</p> <p>Installation of infrastructure related to water provision must comply with environmentally sound design and best practices, as provided in USAID Sectoral Guidelines for Construction (http://www.usaidgems.org/Sectors/construction.htm) and Water Supply and Sanitation</p>

Summary: Inclusive of latrines, behavior change, drinking water access, drinking water quality, point of use treatment	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	(http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final w GCC Addition May11.pdf).
Point of use water purification - flash chlorination, draining, filtration, etc.	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Water quality testing must be used to verify that the point of use treatment (e.g., Aquatab and sand-filter treatment) is sufficient to ensure the safety of drinking-water. 2. Any USAID-supported activity engaged in the provision of potable water must adhere to Guidance Cable State 98 108651, which requires arsenic testing. That 1998 cable also anticipates “practical guidelines on sampling and testing for arsenic” that were then under development. Refer to the USAID, “Guidelines for Determining the Arsenic Content of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa.” USAID requires, at minimum, testing of groundwater for arsenic and fecal coliform, at all water point construction or rehabilitation actions prior to opening of the water source to public consumption.

INTERVENTION CATEGORY E. IRRIGATION AND LIVESTOCK WATERING POINTS

Summary: Inclusive of infrastructure for the explicit purpose of livestock water or irrigation supply, mixed use watering systems, earthworks for impoundments or watering points, protection around water points	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Construction or rehabilitation of irrigation systems aiming to enhance agricultural productivity through the use of improved water storage, conveyance, lifting and application technologies related to surface, ground and rain water management</p> <p>-Cultivable Command Area (CCA) must be < 200 ha</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IPs engaged in water availability for agriculture and upgrading and/or introducing small-scale irrigation technologies will follow best practices and assure implementation of environmental mitigation and monitoring conditions specified in USAID Sectoral Guidelines for http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines Agriculture 2014.pdf 2. Irrigation projects will be planned and managed with community participation in the context of overall regional development plans, including both the upland catchment areas and the catchment areas downstream and will consider the role of the community in

Summary: Inclusive of infrastructure for the explicit purpose of livestock water or irrigation supply, mixed use watering systems, earthworks for impoundments or watering points, protection around water points

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>construction and management of the system and mechanisms for potential conflicts resolution.</p> <ol style="list-style-type: none"> 3. The planning process will consider the capacity of land and water resources and their seasonal water variability to support irrigation for the number of users, optimum scale of the scheme, and potential impacts on the soils. 4. The following considerations will be integrated as appropriate in developing irrigation projects: <ul style="list-style-type: none"> • locating the irrigation project on the site where negative impacts are minimized; • improving the efficiency of existing projects and restoring degraded croplands to use rather than establishing a new irrigation project; • developing small-scale, individually-owned irrigation systems as an alternative to large-scale, publicly-owned and managed schemes; • using micro-irrigation systems to decrease the risk of waterlogging, erosion and inefficient water use; • using treated wastewater, where appropriate, to make more water available to other users; training farmers in water management. 5. Water quality will be tested on the annual basis, however in locations where water quality tends to be low, more frequent testing should be conducted. The parameters of importance for irrigation water testing include: salinity, infiltration, specific ion toxicity, and other parameters depending on the scale and type of irrigation system. 6. In addition to these general conditions, specific conditions will be established based on screening of actions implemented under this category using an Environmental Irrigation Checklist to be developed by the IPs. <p>For construction and rehabilitation of irrigation systems and for water and soil conservation systems construction see Intervention Category G.</p>
Construction or rehabilitation of irrigation systems aiming to enhance agricultural productivity through the use of improved water	<p>Deferral. For actions which involve support for construction or rehabilitation of irrigation systems >200 ha, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains</p>

Summary: Inclusive of infrastructure for the explicit purpose of livestock water or irrigation supply, mixed use watering systems, earthworks for impoundments or watering points, protection around water points

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>storage, conveyance, lifting and application technologies related to surface, ground and rain water management.</p> <p>-Cultivable command area (CCA) more than 200 ha.</p>	<p>post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p>
<p>Construction and rehabilitation of supply ponds for irrigation or livestock watering</p> <p>Using livestock watering points</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. The awardee/IP engaged in construction of water supply ponds will ensure environmentally sound design by skilled professionals and actionable mitigation at every phase of construction and operation, as provided in USAID Sectoral Guidelines for Livestock http://www.usaidgems.org/Documents/SectorGuidelines/Livestock%20Guideline%20Final_w_GCC_Addition_May19.pdf; USAID Sectoral Guidelines for Water Supply and Sanitation http://www.usaidgems.org/Documents/SectorGuidelines/Wat%20San%20Guideline%20Final_w_GCC_Addition_May11.pdf; and USAID Sectoral Guidelines for Construction http://www.usaidgems.org/Sectors/construction.htm. 2. Prior to creation of the supply pond, the IPs or their designated contractors, must obtain all required applicable authorizations, licenses and permits from the local authorities. 3. Pond siting assessment must address: <ul style="list-style-type: none"> ● site selection and design measures to prevent contamination of groundwaters from seepage, ● minimizing dust, erosion, and sedimentation ● damage to sensitive wetland ecosystems, ● mitigation measures to prevent runoff into ponds (e.g., barriers or vegetative plantings, fabric covers, buffer strips, contour drains) 4. The awardee/IP engaged in actions related to livestock production and rangeland management, where there is direct access of livestock to watercourses, will address

Summary: Inclusive of infrastructure for the explicit purpose of livestock water or irrigation supply, mixed use watering systems, earthworks for impoundments or watering points, protection around water points

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	preserving the integrity of watercourses, streambanks, and riparian areas through environmentally responsible livestock management. Please refer to condition for development of specified in Rangeland Management and Livestock production for development of range management plan in Intervention Category B.

INTERVENTION CATEGORY F. BUSINESS DEVELOPMENT AND FINANCE

Summary: Inclusive of agricultural financing, public private partnerships, private enterprise support, investment, business development services	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Partial investment in the private sector to develop groundwater resources</p> <p>Partial investment in the private sector to rehabilitate or upgrade existing groundwater systems</p> <p>Development and strengthening of the private sector to provide operation and maintenance services for existing and new water infrastructure</p> <p>Stimulate private investments through PPPs in value chains and markets (e.g, small ruminants, poultry, rural foods)</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Training curriculum or capacity building to strengthen the private sector in the water provision sector must address: <ul style="list-style-type: none"> • Best practice measures in borehole siting, protection, water quality testing, and conserving water. • Assessment of resource capacity to meet local demand • Occupational health and safety measures for groundwater service technician 2. The private sector must comply with national/local policies (if any exist) 3. To the extent practicable, the private sector partners must not promote or invest in unsustainable abstraction or groundwater resource development that does not adhere to USAID standards. <p>Recommended Social Mitigation Measure: Investments should be screened for potential land rights issues and social conflicts around the resource.</p> <p>Deferral. For actions which involve large infrastructure investments (generally >\$250K and 10000m²), resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p>
<p>Link financial services to improved post-harvest techniques at the farmer level – warranties, equipment leasing, credit.</p>	<p>Negative Determination with Conditions, as follows</p> <ol style="list-style-type: none"> 1. Support post-harvest should incorporate cleaner production and waste energy and water minimization mitigation measures into actions, in accordance with mandatory references for best practice: USAID Guidelines for Micro and Small Enterprises: http://www.usaidgems.org/sectorguidelines.htm.. 2. Financial institutions must provide to USAID a summary of their codified environmental and social screening process for the technologies supported.

Summary: Inclusive of agricultural financing, public private partnerships, private enterprise support, investment, business development services

Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<ol style="list-style-type: none"> 3. Access to finance, loans, materials will not promote actions that have significant impact or deteriorate the environment. IPs must ensure that receiving parties are trained on best environmental practice related to their field using USAID sector environmental guidelines
<p>DCAs for acquisition of inputs, small-scale irrigation, production, processing, storage, transportation, collection and exportation of cereals, livestock and high-value vegetables (i.e. tomatoes, onions, beans).</p>	<p>Negative Determination with Conditions, as follows</p> <ol style="list-style-type: none"> 1. The Guaranteed Parties will provide a copy of their environmental policies and procedures to USAID for review by the managing team, the MEO, and the REO. 2. USAID, including the MEO and REO, will evaluate the lender's environmental policies for sufficiency to ensure compliance with the environmental provisions of the standard language in the Guarantee Agreement. 3. If the lender's capacity is judged, in this evaluation, to be insufficient, USAID/SRO will provide for appropriate lender capacity building. This capacity building action will be designed in coordination with the MEO and REO. 4. The USAID/SRO will periodically review the Guaranteed Party's and the Borrower's implementation of this requirement, including during project monitoring visits. 5. Environmental compliance will comprise one of the performance measures of the project's mid- and/or end-term technical evaluation to be carried out by the USAID Team responsible. 6. The USAID Sectoral Guidelines for the sector being supported (http://www.usaidgems.org/sectorGuidelines.htm), will inform compliance with these conditions, and should be considered for use in training of the lender (Guaranteed Party) and appropriate parties. <p>DCAs through the Burkina Faso DCA loan guarantee with Ecobank and Fatiere des Caisses Populaires du Burkina (FCPB) should reference conditions in: https://ecd.usaid.gov/document.php?doc_id=48996.</p>
<p>Improve access to agriculture inputs through delivery models where there is limited direct control on consumer roles</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Where USAID directly supports delivery models in the agricultural sector, USAID bears full responsibility for adverse impacts when its support fails to address environmental impacts. The

Summary: Inclusive of agricultural financing, public private partnerships, private enterprise support, investment, business development services	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>conditions for the particular inputs should be referenced as they are addressed elsewhere in this document.</p> <ol style="list-style-type: none"> Where USAID funds or promotes communications, creates linkages, or establishes value chains but does not directly market or work with agricultural input consumers, USAID generally has far less control over field level environmental impacts. Reduced control means that USAID's responsibility for adverse impacts is shared or attenuated, but not eliminated. Therefore, where USAID's support means that USAID has substantial influence over these systems and structures, USAID and IPs must work to best assure that these systems and structures support appropriate management and health and safety issues around inputs.
<p>Promote livelihood diversification, (e.g., in the areas of rural foods, carpentry, electrician, retail, services, and natural resource products)</p> <p>Provide cash grants to households for livelihood diversification</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> When applicable, SIEEs should indicate requirements for site-specific subsidiary environmental review for the implementation of livelihood diversification or economic growth-related initiatives which involve sub-grants or sub-award will be implemented using the AFR ERF/ERR process (available at: http://www.usaidgems.org/subsidiary.htm). The ERF/ERR must be reviewed and approved by the A/COR, MEO, and REO prior to implementation of the action. The awardee/IP must assure implementation of any environmental mitigation and monitoring conditions specified by the approved ERF/ERR. All direct and grants livelihood diversification activities must have environmental mitigation and monitoring measures generally consistent with applicable good-practice guidance in USAID's Sector Environmental Guidelines (http://www.usaidgems.org/sectorGuidelines.htm)

INTERVENTION CATEGORY G. INSTRUCTURE AND CONSTRUCTION

Summary: Inclusive of earthen works and above ground structures	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Construction, rehabilitation or upgrading of infrastructure and building structures <1,000m ² ,	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> Those actions having no complicating factors (see left) will incorporate the following mitigation

Summary: Inclusive of earthen works and above ground structures

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>including, but not limited to, produce collection and marketing structures, transport hubs, post-harvest storage structures, animal housing structures, and other small structures.</p> <p>Warehouses, health facilities and clinics, cooperative storage or processing facilities < 1000m²</p> <p><i>For sites with no complicating factors, the site meets the following criteria:</i></p> <ul style="list-style-type: none"> • <i>Not within 30m of a permanent or seasonal stream or water body</i> • <i>Does not involve displacement of existing settlement/inhabitants</i> • <i>Has an average slope of less than 5 percent</i> • <i>Not heavily forested, in an otherwise undisturbed local ecosystem, or in a protected area</i> • <i>Disturbed area of more than 1,000 sq meters or 10 km (for rural feeder roads)</i> 	<p>measures:</p> <ul style="list-style-type: none"> • All construction / rehabilitation actions shall be conducted following the principles as provided in the USAID Sectoral Guidelines for Small Scale Construction http://www.usaidgems.org/Sectors/construction.htm. • No construction should be undertaken without the relevant permits and licenses. Where construction is being undertaken on communal land, community engagement in planning and decision making needs to be considered. • Construction actions will introduce required measures to minimize solid waste pollution, water pollution and polluted water runoff, soil pollution and noise and air pollution in a manner generally consistent with the Best Practices in Construction, including the development of construction management plans, promotion of resource efficiency, and environmentally friendly procurement of materials. • Construction will be properly sited in accordance with water and groundwater resources. • Occupational safety and health of employees will be ensured through development of site health and safety plans which adhere to best safety practices and availability of PPE. • No lead paint or asbestos will be used in construction. <p>2. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place (see Section 6 for special limitations).</p> <p>For multiple sites of 1,000m² or for construction of structures above 1,000m² but less than 10,000m², the above conditions apply, in addition:</p> <ol style="list-style-type: none"> 1. An engineer will plan and supervise all construction designs and actions. 2. Construction management plans and pre-construction site surveys will include specific mitigation measures and capture baseline data for the site. Surveys and management plans should address: <ul style="list-style-type: none"> • Water hydrology and water resources adequacy, availability, and location • Soil type and slope of the site

Summary: Inclusive of earthen works and above ground structures

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<ul style="list-style-type: none"> • Less than \$250,000 total cost <p>Construction of infrastructure and building structures between 1,000m² to 10,000m²</p>	<ul style="list-style-type: none"> • Vegetation removal and replanting requirements • Land uses by the local community and access rights <p>3. For construction in the presence of complicating factors, the conditions and process are outlined in USAID ADS 201maw Mandatory Reference – Construction Risk Management.⁶⁹ The Construction Risk Management (ADS 201maw Mandatory Reference) provides guidance on screening for construction actions that constitutes construction. Any new construction actions must address conformance with, or variation from, each of the principal elements within USAID’s preferred approach to construction (Construction Risk Management: ADS 201maw Mandatory Reference). The screening should be organized to describe actions taken, or planned, to mitigate construction risk at different stages of activity implementation: Planning, Engineering Design, Construction Procurement, and Implementation. The Agency’s preferred construction approach is considered the ‘least risky’ approach for construction implementation and serves as the benchmark for required construction risk screening. Nevertheless, for a variety of programmatic, pragmatic and/or contextual reasons, it may be necessary to deviate from this preferred approach. The operating unit must identify, analyze and evaluate the additional risk accrued through variations from the preferred approach. The operating unit must include the risk screening conclusion (or overall risk rating) in the project files.</p>
<p>Feeder roads construction and repair</p> <p><i>For sites with no complicating factors, the site meets the following criteria:</i></p> <ul style="list-style-type: none"> • Length of road work is less than ~10 km 	<p>Negative Determination with Conditions, as follows:</p> <p>All repair/rehabilitation actions shall be conducted following the principles as provided in the USAID Sectoral Guidelines for Rural Roads, which can be found at: http://www.usaidgems.org/Sectors/construction.htm. http://www.usaidgems.org/Documents/SectorGuidelines/Rural%20Road%20Guideline%20Final w GCC Addition May11.pdf</p> <p>Deferral. For actions which involve road construction, resolution of the deferral will follow in the development and approval of the Supplemental IEE. The Supplemental IEE must be fully cleared prior to commencing the</p>

⁶⁹ Construction Risk Management: A Mandatory Reference to ADS 201. October 2017. Available at: <https://www.usaid.gov/ads/policy/200/201maw>.

Summary: Inclusive of earthen works and above ground structures

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<ul style="list-style-type: none">• <i>No change in alignment or right of way</i>• <i>Ecologically sensitive areas are at least 100 m away from the road and not affected by construction or changes in drainage.</i>• <i>No protected areas or relatively undegraded forest are within 5 km of the road.</i>	<p>action. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented.</p>

INTERVENTION CATEGORY H. HEALTH

Summary: Inclusive of nutrition, general health support, behavior change, and supply chain management	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Improving pharmaceutical supply chains management	<p>Negative Determination subject to the following conditions:</p> <ol style="list-style-type: none"> 1. All efforts to strengthen or improve health commodity supply chains (e.g., pharmaceuticals, tests kits, etc.), including procurement, storage infrastructure, and distribution must address and take all practicable efforts to assure that adequate facilities, procedures and capacities are in place to properly manage expired, used, obsolete or surplus commodities and/or that plans and strategies incorporate and provide for such management. In any instance that a <u>USAID activity is in control of commodities at end-of-life</u>, either through partners mechanisms or through direct support, appropriate end-of-life management must be assured. <p>Mandatory references for “appropriate end of life management”: WHO Guidelines for Safe Disposal of Unwanted Pharmaceuticals. “Healthcare Waste” chapter, USAID Sector Environmental Guidelines www.usaidgems.org/Sectors/healthcareWaste.htm</p> <ol style="list-style-type: none"> 2. Training, supervision, curricula development and other health care worker/work force capacity building for supply chains must address appropriate management practices* concerning the proper handling, use, and disposal of expired pharmaceuticals and packaging. <p>*For all actions in this category, “Appropriate Management” of health care wastes, inclusive of pharmaceutical wastes, is defined as being in substantial conformity with the USAID’s Sectoral Guidelines “Health Care Waste” (www.usaidgems.org/Sectors/healthcareWaste.htm), particularly the section titled, “Minimum elements of a complete waste management program.” Other important references to consult for sound waste management practices are “WHO’s Safe Management of Wastes from Healthcare Actions.</p> <p>Actions conducted under the Global Health Supply Chain must reference the following global EMMP for mitigation measures: https://ecd.usaid.gov/document.php?doc_id=50325.</p>
Training of health workers	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Training/formative supervision and curricula actions for health workers, when the techniques or care situations being addressed would generate and require disposal of hazardous or highly hazardous waste (e.g. sharps, afterbirth from delivery, waste from screening for HIV or STDs, sputum samples for diagnosis of TB), the training/curricula/supervision must address appropriate management practices

Summary: Inclusive of nutrition, general health support, behavior change, and supply chain management	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<p>concerning the proper handling, use, and disposal of medical waste, including blood, sputum, and sharps.</p> <ol style="list-style-type: none"> IPs must, as appropriate, include healthcare waste management messages for health workers. Health care workers should be instructed how to deliver positive messages about personal and household hygiene, sanitation, and proper disposal of condoms and other potentially harmful materials along with, as appropriate, standard health care messages. Any healthcare waste directly generated by USAID-funded training actions must be appropriately managed.* <p>*For all actions in this category, “Appropriate Management” of health care wastes, inclusive of pharmaceutical wastes, is defined as being in substantial conformity with the USAID’s Sectoral Guidelines “Health Care Waste” (www.usaidgems.org/Sectors/healthcareWaste.htm), particularly the section titled, “Minimum elements of a complete waste management program.” Other important references to consult for sound waste management practices are “WHO’s Safe Management of Wastes from Healthcare Actions.</p>
Support for health facility operation and systems strengthening	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> The health team and IPs must ensure, to the greatest extent feasible, that the medical facilities and operations benefitting from USAID support have adequate procedures and capacities in place to properly handle, label, treat, store, transport and properly dispose of blood, sharps and other medical waste and that norms and training include environmental health considerations. The ability of IPs and the Health Team to assure such procedures and capacity is limited by its level of control over the management of the beneficiary facilities and operations. <p>“Proper Management” of health care wastes is defined as being in substantial conformity with the USAID’s Sector Environmental Guidelines “Health Care Waste” (http://www.usaidgems.org/Sectors/healthcareWaste.htm), particularly the section titled, “Minimum elements of a complete waste management program.” Other important references to consult for sound waste management practices are “WHO’s Safe Management of Wastes from Healthcare Activities.</p> <ol style="list-style-type: none"> The capacity-strengthening at health facilities must involve all feasible efforts to assure that these systems:

Summary: Inclusive of nutrition, general health support, behavior change, and supply chain management	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
	<ul style="list-style-type: none"> • Address and support proper waste management (including handling, labeling, treatment, storage, transport and disposal of medical waste); • Address and support the capacity of medical facilities for waste management; • Prioritize environmental health considerations <p>3. It is understood that the USAID support to health delivery and management systems and organizations does not, in most cases, equate to direct USAID control over these systems and organizations. However, IPs must proactively advance these principles in their analysis, recommendations, and technical support.</p>
Education on food storage and preparation	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Demonstrations and education on food storage and preparation will encourage energy saving cooking practices such as soaking, drying wood, using biochar, using lids, etc. 2. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place (see Section 6 for special limitations). <p>Fumigation of aid commodities is guided by the USAID Programmatic Environmental Assessment (PEA) for Phosphine Fumigation of Stored Agricultural Commodity available at: http://www.usaidgems.org/fumigationpea.htm</p>

INTERVENTION CATEGORY I. AGRICULTURE

Summary: Inclusive of traditional and mixed systems (e.g. climate smart agriculture)	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Promotion of agricultural value chains, value chain linkages development, agricultural finance, credit (see business services Intervention Category F), establishing and strengthening agricultural associations	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. All agricultural actions must incorporate and promote sound environmental strategies and management practices in general conformity with relevant chapters of USAID's Sector Environmental Guidelines at: (http://www.usaidgems.org/sectorGuidelines.htm); 2. Development and support of agricultural value chains will incorporate cleaner production and waste energy and water minimization best practices, in accordance with mandatory references for best practice: USAID Guidelines for Micro and Small Enterprises: http://www.usaidgems.org/sectorguidelines.htm.
Supporting agricultural policy actions	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Agricultural policy support, must to the extent practicable, integrate or otherwise reflect best practices such as those identified in the USAID Sectoral Guidelines for Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_Agriculture_2014.pdf; USAID Sectoral Guidelines for Dryland Agriculture http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_DrylandAgriculture.pdf; and USAID Sectoral Guidelines for Livestock http://www.usaidgems.org/Documents/SectorGuidelines/Livestock%20Guideline%20Final_w_GCC_Addition_May19.pdf. 2. Agricultural policy development, will be based on current data and analysis on environmental trends, including principles of sustainable agriculture and GCC adaptation strategies. Data and analysis may be drawn from USAID or other internationally recognized research or development entities, such as Food and Agricultural Organization (FAO). 3. No new protected areas or pristine ecosystems will be proposed for clearing as part of the policy, unless deemed absolutely necessary. <p>Positive Determination for support to agricultural policy development for protected or pristine areas.</p>

Summary: Inclusive of traditional and mixed systems (e.g. climate smart agriculture)	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Agricultural production and related actions that include:</p> <p>Training and capacity building (both field and classroom) and demonstrations;</p> <p>Technical assistance (consultations, advisory, demonstrations and extension services)</p> <p>Agricultural research – for example seed demonstration or not on research stations</p> <p>Introduction or strengthening use of techniques and technologies, including but not limited to tillage, no-tillage, cover cropping, mixed cropping/rotation, mixed cropping, and irrigation (for purchase or installment of irrigation schemes or equipment see Intervention Category E.</p> <p>Field crops and fodder production</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. All agricultural actions must incorporate and promote sound environmental management practices in general conformity with relevant chapters of USAID’s Sectoral Guidelines at: http://www.usaidgems.org/sectorGuidelines.htm; 2. The selection and demonstration of crops for cultivation should reflect local environmental conditions, with particular emphasis on the local terrain, biodiversity, future climate predictions, and quality and quantity of water and soil resources. 3. All agricultural actions will include sensitization of partners, stakeholders and beneficiaries to climate risks of agriculture and required environmental safeguards. 4. Where appropriate, the partner will promote environmental safeguards and climate adaptation for agricultural actions including, to the extent possible: <ul style="list-style-type: none"> • Avoid land clearance and removal of vegetation, with a preference for utilizing already cleared plots. • Where plots must be cleared, it will be done in environmentally sustainable manner conserving vegetation and replanting trees. • Discourage agricultural actions within 30 meters of water bodies. • Plot siting will take into consideration local social and cultural constructs and norms. • The use of chemical inputs should not be avoided on principle, but if synthetic inputs are to be promoted a pesticide safer use capacity building strategy should be supported by a package of marketing, quality improvement and value addition actions that can support the increased expense of input requirements. <p>Deferral. For all actions supporting agricultural research or demonstration that are not confined to small areas (e.g., on an agricultural research station), the IP will provide resolution of the deferral in the development and approval of the Supplemental IEE. If the deferral remains post-award, it must be resolved through the development and approval of an amendment to the Supplemental IEE before any related activities may be implemented. The Supplemental IEE must be fully cleared prior to commencing the action.</p>

Summary: Inclusive of traditional and mixed systems (e.g. climate smart agriculture)	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>Home gardens: support for establishing and maintaining</p> <p>Fruit tree production and establishing tree nurseries</p>	
<p>Support for seed and seedlings procurement, use or both, including training, demonstrations, supply, provision of vouchers, support for seed multiplication, and establishment of nurseries.</p> <p>Introduction of improved crop varieties and native and non-native species</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. No introduction of non-native species where their introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species will not be introduced. 2. All seed and seedlings introduction should conform to sanitary and phytosanitary standards of the country and be considered for their applicability to the local conditions. 3. The provision/distribution, promotion of, and training in use of fertilizers (e.g., for nursery or seed multiplication) must conform to best practices outlined in the Africa Bureau Fertilizer Fact Sheet http://www.encapafrica.org/egssaa/AFR_Fertilizer_Factsheet_Jun04.pdf 4. Only seeds appropriate to the agro-climatic zones will be promoted. However, climate change will be considered as well in the selection of appropriate seeds based on the agro-climatic zone. 5. The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place. (see Section 6 for special limitations).
<p>Genetically engineered (GE) organism importation, promotion, and research support</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Actions involving GE organisms may require the preparation of Biosafety Risk Assessment in accordance with ADS 211 (2018), as well as an Amendment to this IEE. The Agency Biosafety Officer (ABO) in the Bureau for Food Security (BFS) must be consulted early in the process to determine if a Biosafety Risk Assessment is necessary. A Biosafety Risk Assessment will

Summary: Inclusive of traditional and mixed systems (e.g. climate smart agriculture)

Actions/Interventions	Recommended Determination and Condition(s), as applicable
<p>*GE organisms are defined as “living organisms modified by genetic engineering techniques” and include, e.g., plants, microorganisms, live animal vaccines (if used outside a contained area and not approved in the US), animals, and insects.</p>	<p>require the full collaboration of the Africa Bureau Environmental Officer (BEO), the MEO, well as the ABO.</p> <ol style="list-style-type: none"> 2. In addition, all GE support will: <ul style="list-style-type: none"> • follow host government laws and regulations and build capacity where appropriate in oversight agencies, and • the IP will detail how the action will meet host country requirements and otherwise build capacity for implementing the host country process within the EMMP. 3. Contained or confined trials (within buildings, barns, or laboratories) supported in any way by USAID will be subject to ADS 211, the above-specified conditions for all GE organism actions, as well as the following: <ul style="list-style-type: none"> • follow the host government procedures including obtaining appropriate licenses and permits; and • provide copies of the permits and application materials to the A/COR at USAID. 4. In addition to following ADS 211 guidance, trials in confined fields or research outside of buildings are subject to the following conditions including those above for all support and contained support; <ul style="list-style-type: none"> • provide public notice for consultation on the environmental review of the trials, which will be documented and questions and responses provided to USAID; • where appropriate, develop an action plan for decisions or changes related to the consultations; and • create a communication plan for disseminating the results of the field trials. 5. In addition to ADS 211 guidance, USAID support, including widespread promotion, of GE organism products or commodities is only allowable for products fully approved and licenses through host government processes. The proponent will: <ul style="list-style-type: none"> • provide proof of licensing; and • develop a factsheet, communication materials, and labelling identifying the GE product; and • if training is provided, conduct safety and education sessions applicable to those handling the products.

Summary: Inclusive of traditional and mixed systems (e.g. climate smart agriculture)	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Support for fertilizer procurement or use that includes training, demonstrations, supply, and other support including provision of fertilizers organic and inorganic, green manure, and other soil amendments for integrated soil management including provision of vouchers, facilitation of access to inputs or work with input suppliers and other actions that provide direct and indirect support related to fertilizer use and procurement.	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. Emphasize and fully integrate information on the environmental risks associated with fertilizer use and best management practices to mitigate these risks. This information should at a minimum be consistent with the risks and best practices outlined in USAID's Africa Bureau Fertilizer Factsheet http://www.encapafrica.org/egssaa/AFR_Fertilizer_Factsheet_Jun04.pdf 2. Develop and implement appropriate safeguards to protect human health and the local ecosystems based on toxicological and environmental data for the proposed fertilizers or soil inoculums. Such safeguards will address product storage, handling and application, including the use of PPE, clean-up and disposal.
Introduction and use of agricultural tools and machinery	<p>Negative Determination with Conditions, as follows:</p> <p>All introductions of new technologies and machinery must be screened for environmental and social impacts over the lifetime use of equipment assessing its potential impacts on air, water, and soil pollution, labor safety and sustainability.</p>
Actions that include protection of crops, seeds and post-harvest and food aid commodities protection that require support of pesticides including promotion, provision of vouchers, improved access to agrodealers and support provided to agrodealers), integrated pest management (IPM) training, provision of PPE, pesticide treatment, or use of pesticide treated seed	<p>Negative Determination with Conditions, as follows:</p> <p>The procurement or use of pesticides, including herbicides, insecticides, acaricides, and fungicides, is disallowed until such time that a PERSUAP is completed pursuant to 22CFR Regulation 216.3 (b)—USAID pesticide procedures— and duly approved. Actions involving pesticide safer use training, IPM measures, and extension outreach, but not procurement or use of pesticides, may proceed with an approved EMMP in place (see Section 6 for special limitations).</p> <p>Fumigation of aid commodities will be guided by the USAID Programmatic Environmental Assessment (PEA) for Phosphine Fumigation of Stored Agricultural Commodity available at: http://www.usaidgems.org/fumigationpea.htm</p>

Summary: Inclusive of traditional and mixed systems (e.g. climate smart agriculture)	
Actions/Interventions	Recommended Determination and Condition(s), as applicable
Pesticide use for fumigation of commodities	
<p>Agricultural harvest and post-harvest actions that include:</p> <p>Training, capacity building and technical assistance (both field and classroom), introductions and demonstrations of harvest and post-harvest techniques and technologies</p> <p>Research of harvest and post-harvest technologies and other postharvest actions including:</p> <p>Providing or organizing collection points or intermediary collection centers for produce</p> <p>Packaging and transportation of commodities, including seed bags or PICS</p> <p>For use of pesticides and fumigation of stored commodities, see section above that addresses crop and commodities protection.</p>	<p>Negative Determination with Conditions, as follows:</p> <ol style="list-style-type: none"> 1. All introductions of post-harvest technologies and use of machinery must be screened for environmental and social impacts over the lifetime use of equipment assessing its potential impacts on air, water, and soil pollution, labor safety and sustainability. 2. Development and support of value chains based on forest products will incorporate cleaner production and waste energy and water minimization best practices. 3. All post-harvest actions where waste is generated will have a waste management plan. 4. Support for micro and small-scale processing enterprises will follow guidelines outlined by the “Food processing resource efficient and cleaner production briefing and resource guide for micro & small enterprises” http://www.usaidgems.org/Documents/MSEs/USAID_MSE_Sector_Guideline_Food_Processing_2013.pdf.

6.0 LIMITATIONS OF THIS INITIAL ENVIRONMENTAL EXAMINATION

The determinations recommended in this document apply only to projects/activities and actions described herein. Other activities that may arise must be documented in either a separate IEE, an IEE amendment if the activities are within the same project/activity, or other type of environmental compliance document and shall be subject to an environmental analysis within the appropriate documents.

Pesticides. Upon writing of this document, USAID/SRO is finalizing a PERSUAP to cover actions involving procurement, use, training, and demonstration of pesticides within this IEE. In the absence of an approved PERSUAP, the AFR BEO has advised that an IPM and safer use training and extension outreach may proceed if an approved EMMP is in place. Pesticides may not be procured or used until a PERSUAP is fully approved. Once fully approved, all pesticide actions must comply with that PERSUAP.

Positive Determinations. Other than actions determined to have a Positive Threshold Determination or Deferral, it is confirmed that the actions described herein do not involve actions normally having a significant effect on the environment, including those described in 22CFR216.2(d).

Excluded Actions. In addition, other than actions determined to have a Positive Threshold Determination and/or a PERSUAP, it is confirmed that the actions described herein do not involve any actions listed below. Any of the following actions would require additional environmental analyses and environmental determinations:

- Support project preparation, project feasibility studies, or engineering design for activities listed in §216.2(d)(1);
- Affect endangered and threatened species or their critical habitats per §216.5, FAA 118, FAA 119;
- Provide support to extractive industries (e.g. mining and quarrying) per FAA 117;
- Promote timber harvesting per FAA 117 and 118;
- Lead to new construction, reconstruction, rehabilitation, or renovation work per §216.2(b)(1);
- Provide support for regulatory permitting per §216.1(b)(2); and
- Lead to privatization of industrial facilities or infrastructure with heavily polluted property per §216.1(b)(4).

BEO Standard Conditions. In addition to the specific conditions enumerated in Section 5, the negative determinations recommended in this IEE are contingent on full implementation of a set of general monitoring and implementation requirements specified here.

6.1 The Design Lead or A/COR will develop Supplemental IEEs for their activities because the application of 22 CFR 216 must be appropriately informed by site-specific conditions and appropriately applied to the specific award/activity. Toward this end, as a general condition of approval, this Programmatic IEE requires that a Supplemental IEE be developed and approved for each activity under the RISE II PAD by the A/COR or the activity design team. These Supplemental IEEs will:

- a) **Provide additional specific details** regarding activity and its entailed actions, including location (environmental baseline), and the impacts associated with all actions.
- b) **Consolidate all required conditions.** For actions addressed by the Programmatic IEE, Supplemental IEEs must, at a minimum, include the conditions for these actions as established by the Programmatic IEE and confirm that no additional activities are planned for the activity at the time of completion. Additional or more stringent conditions or determinations must be recommended as indicated and documented within the Supplemental IEE.
- c) **Rectify any deferrals from the Programmatic IEE** for the planned award/activity.
- d) Define and fully comply with 22 CFR 216 requirements for **actions** that may not have been addressed in the Programmatic IEE because they were defined during the activity design process rather than at the PAD level. This includes establishing determinations, and as relevant, conditions for these actions.
- e) **Provide direction for the development of an Environmental Assessment** or Scoping Environmental Assessments for actions identified as a Positive Determination.
- f) Specifically **direct the actions of the implementing partners** in the development of necessary subsidiary environmental compliance documentation, including:
 - i) the EMMP for actions assigned a negative determination with conditions in the Supplemental IEE (both new conditions and those reiterated from the Programmatic IEE)
 - ii) development and implementation of the ERF/ERR for sub-grants and sub-awards. The ERR can become the face sheet for the EMMP.

6.2 The A/COR will ensure appropriate environmental compliance language, including standard limitations defined in the IEEs, be incorporated into solicitations and awards for these activities. These requirements will ensure:

- a) Each A/COR with the support of the MEO must develop an Activity-level Supplemental IEE, including Activity-level CRM screening, and obtain approval by the MEO, REO, and BEO(s). These Supplemental IEEs will draw upon this RISE II Programmatic IEE and refer to the DCHA FFP FY18 RFA IEE. Conditions from the Supplemental IEE (inclusive of those already defined in this Programmatic IEE) must be integrated into the Activity design, staffing, and budget as appropriate or required in order to ensure Activity compliance with the conditions.
- b) The A/COR must provide the Supplemental IEE to the IP upon award and prior to project start-up. IPs must develop, obtain approval for, and fully implement EMMPs, environmental mitigation and monitoring reports (EMMRs), as appropriate to the projects/activities. The EMMPs include the actions assigned a negative determination with conditions in the Supplemental IEE (both new conditions and those reiterated from the Programmatic IEE); and guide the development and implementation of the ERF/ERR for sub-grants and sub-awards.
- c) IPs integrate EMMPs in work plans and ensure adequate budget to fully comply with requirements including EMMP implementation and monitoring.

- d) IPs report on monitoring actions and take corrective measures when issues are identified.
- e) Solicitations include Statements of Work with task(s) for meeting environmental compliance requirements and appropriate evaluation criteria.
- f) Ensure integration of compliance responsibilities in prime and sub-grants agreements and contracts.
- g) IP use the Environmental Review Form to screen sub-grant applications and to aid in development of EMMPs as well as document baseline conditions and screen for activity specific impacts to ensure environmental, health, and safety safeguards are adequately programmed.
- h) Ensure sub-grantees and sub-contractors have capacity to fully carry out environmental compliance requirements.
- i) IPs will ensure Compliance with partner country regulations. Implementation will adhere to applicable partner country environmental laws.

6.3 The A/COR will review the Supplemental IEEs against annual work plans to ensure all planned actions remain covered by the IEE and if new actions are identified which fall outside the scope of this IEE, an Amendment will be provided to the BEO for concurrence.

6.4 The A/COR, with the support of the MEO upon request, is responsible for monitoring compliance of actions by means of desktop reviews and site visits.

6.5 The A/COR is responsible for preparing appropriate environmental compliance documentation for new or modified project/activity components (such as amendments to the Supplemental IEE).

6.6 The A/COR and/or MEO will provide briefings for the IP on environmental compliance responsibilities.

6.7 The A/COR will obtain BEO clearance for any deferrals prior to implementation of deferred actions.

6.8 The A/COR will ensure that Negative Determination with Conditions and Positive Determination threshold decisions are followed by appropriate environmental analyses and development and implementation of mitigation and monitoring measures.

6.9 If at any time the project is found to be out of compliance with this Programmatic IEE or the associated Supplemental IEEs, the A/COR, MEO, and/or REO shall immediately notify the BEO.

6.10 The BEO or designated representative may conduct site visits or request additional information for compliance monitoring purposes to ensure compliance with the IEEs, as necessary.

6.11 All EMMPs shall be reviewed and approved by A/COR, MEO, and REO.

6.12 The A/COR will ensure that an EMMP will be prepared and submitted by the IP, and that an Environmental Assessment is conducted and report prepared, for approval by USAID prior to implementation of actions receiving a Negative Determination with Conditions and Positive Determination respectively.

6.13 Changes in actions and their associated EMMPs require amending the IEE (or Supplemental IEE as appropriate).

6.14 The A/COR shall keep and maintain environmental compliance documents in the official project file and submit to the MEO or REO upon request for internal quality reviews or AFR best practice reviews (BPRs).

6.15 Nothing in this document substitutes for or supersedes IP's or sub-awardee's/-grantee's/-contractor's responsibility for compliance with all applicable partner country laws and regulations. They must comply with local environmental regulations unless otherwise directed in writing by USAID. However, in the case of a conflict between partner country and USAID regulations, the latter shall govern.

6.16 The IP will prepare a closeout plan consistent with contract documentation for A/COR review and approval that outlines responsibilities for end-of-project operation, for example, clean-up and disposal of veterinary supplies, construction, surplus pesticide and other wastes, and/or transition of other operational responsibilities. Where identified as needed, the closeout/transition operation will provide training to support continuity of environmental responsibilities. The A/COR will ensure the IP sign and submits a Record of Compliance with the EMMP certifying that the organization met all applicable EMMP conditions.

7.0 REVISIONS

Revision requirements. Per 22CFR216.3(a)(9), when ongoing programs are revised to incorporate a change in scope or nature, a determination will be made as to whether such change may have an environmental impact not previously assessed. This Programmatic IEE will be amended where the total ceiling of the RISE II PAD increases, there is an extension to the length of the project, or a new action is added that applies broadly across numerous award/activity Supplemental IEEs. The Programmatic IEE amendment must proceed through the clearance and approval process by the team, Mission Director, REO, and the BEO(s).

The Supplemental IEE must be amended when new actions particular to an award/activity are to be implemented, to rectify a deferral, or to increase the ceiling cost or performance period of the activity, or to rectify a deferral. Supplemental IEE amendments must proceed through the clearance and approval process by the team, Mission Director, MEO, REO, and the BEO(s).

Responsibilities for revision. Responsibility for amending this Programmatic IEE lies with the SRO MEO and Sahel REO with input from the affected award/activity teams.

Responsibility for development of the Supplemental IEEs lies with the award/activity teams, with development to be undertaken when the detailed information of the actions are available, but the Supplemental IEE must be cleared not later than activity approval. Per ADS204.5.1,

conditions established by the Supplemental IEE will be incorporated in the award/solicitation language, and where appropriate, the IPs will be directed to develop their associated trailing documentation, EMMPs or ERR/ERFs, with full clearance, prior to commencing those actions.

ANNEX A. CLIMATE RISK SCREENING AND MANAGEMENT TOOL FOR PROJECT DESIGN

PROJECT CRM TOOL OUTPUT MATRIX: CLIMATE RISKS, OPPORTUNITIES, AND ACTIONS

* = A required element, according to the Mandatory Reference

Project elements may include Purpose / Sub-purpose, Areas of Focus, or Activities / Mechanisms, etc.

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
IR 1: Improving water security										
IR 1.1.1: Enhance watersheds and water resources management	20 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	Increasingly erratic and excessive rainfall can lead to flooding, which can destroy infrastructure (e.g., green infrastructure), and cause increased runoff, erosion, river flows, sedimentation, eutrophication	Hard and soft approaches exist to reduce flooding Decreased rainfall and unsustainable water resources management upstream can lead to decreased available water, especially in Niger where most surface water comes from outside the country	High	Multiple bilateral, NGO, and multilateral actions underway to address water risk and improve water-related data availability and capacity in both countries Burkina Faso has water and NRM sector policy Burkina houses water engineer school for all of west africa on water management practice Regional	Flood early warning systems, proper placement of infrastructure, use of climate information to estimate likely size and frequency of floods. Watershed basin modelling could inform the ideal amount of water that can be extracted from the system under various rainfall scenarios.	Water is explicitly acknowledged as one of the main limiting factors to productivity and thus improved management has the potential to better use available supplies under a range of seasonal rainfall scenarios. It will be particularly important to ensure use in one area does not negatively affect other areas (e.g., dam building	Further analysis will be required at the activity level as the appropriate climate risk management options will depend on the watershed of interest. This will include strategic selection and alignment of climate services based on available reliable data, end user needs, and assessing/differentiating what is feasible and	None

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
				<p>Weak organizational structures and watershed management policies can result in adaptation measures that negatively affect people downstream</p> <p>Lack of/ weak information and early warning systems (and early response systems)</p> <p>Some donor-funded initiatives have shown success and potential in both countries (in watershed management and water</p>		<p>watershed organizations exist for large-scale watershed management.</p> <p>Opportunities exist to interweave watershed management and agricultural productivity to ensure land is used appropriately.</p> <p>Watershed management will be essential to ensure sustainability of interventions that seek to increase water use for productivity and drinking.</p>	Improved monitoring can help support management of groundwater	<p>upstream for gardening does not reduce water flow downstream). It will also be important to consider land use changes, which can exacerbate floods during intense rainfall</p> <p>Creative solutions to maximize water drainage and enhance long term water availability and inter-seasonal access will be pursued (eg deblocking drainage barriers, introducing water recycling, etc)</p>	appropriate at different levels (i.e. for a village, a producer organization or a commune)	
			Increased temperatures (which drives higher evaporation)		High	Multiple bilateral, NGO, and multilateral actions underway to address climate	Use of climate information to forecast water availability based on	The project will seek to ensure access to climate services for forecasting water		None

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
			<p>and evapotranspiration), decreased rainfall and drought reduce water availability</p> <p>Actual risk depends on location, especially proximity to water bodies and topography</p>	<p>resources management [water aid, World Food Program (WFP)]</p> <p>Populations sensitized to and experienced with FMNR and SWC practices and benefits</p> <p>Land conventions and water users management plans exist at community levels</p> <p>Limited capacity and information to manage groundwater</p>		<p>risk and improve climate information data availability and capacity in both countries Burkina Faso's Ministry of Agriculture is also of "Amenagements Hydrauliques," and shares a building with the Ministry of Water and Sanitation - partnerships we could better participate in during RISE 2.</p>	<p>seasonal forecast, flexible management mechanisms that can function across a range of water availability scenarios. A contingency plan may be necessary for large scale drought drastically reducing water availability.</p>	<p>availability to inform water extraction/use for production and drinking. Water balance analyses will be used to estimate whether additional water extraction is sustainable, and to develop contingency plans during significant reductions in rainfall.</p>		None
			<p>Increased variability of inter- and intra-annual precipitation can significantly affect water availability from year to year.</p> <p>More intense dry spells can result in land</p>		High		<p>Use of climate information to forecast water availability based on seasonal forecast, flexible management mechanisms that can function across range of water availability scenarios.</p>			

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
			degradation, which can enhance flash floods and land erosion during intense rainfall				Efforts in DO2 to improve agricultural/pastoralist resilience can also help reduce land degradation.			
IR 1.1.2: Improved water management for productive uses		Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	Increasing variability in rainfall and increased temperature can result in decreased water availability and increased demand for and competition over the same limited resources (and potentially cause conflict-- links to 1.2.2). This may become particularly acute during droughts. Decreased	Populations are sensitized to the importance of water for productive uses Pastoralism is an adaptive capacity but is becoming more challenging with climate and ecological change in the region Some projects (eg, Project Regional d/Appui au Pastoralisme	High	Use of climate information to forecast seasonal water availability Early warning systems Integration into other DOs associated with increasing productivity A general understanding of climate on the large watershed will be important to ensure that increases in water use for productive are sustainable and viable in low rainfall years.	Climate smart agriculture, use of climate information, natural resource management, pastoral land management	This project element will be interwoven with the elements in DO2 associated with productivity, as well as nested within the wider water management promoted in IR1.1.1. The exact interventions undertaken will depend on the local context. However, throughout the RISE zones, water tends to be a significant limiting factor to increased and reliable production	Given the location and context specific nuances, further analysis and consideration will be conducted at the activity and implementation stage to identify the most appropriate practices to promote, and the necessity of engaging in flood mitigation measures. Furthermore, additional consideration will be given on how to interweave interventions under this sub-IR with those	None

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
			water availability can significantly constrain productivity in rainfed agriculture, irrigated agriculture (if the water source dries up) and pastoralism if there is not enough water for the animals	au Sahel (PRAPS)) have improved water points for livestock Local conventions and locally-owned NRM plans improve understanding and management of competing uses for water and land-based resources					envisioned under DO2 associated with increasing productivity to ensure that the water resources necessary to sustain productivity increases will exist.	
			Extreme weather events (e.g., flooding) can destroy or damage infrastructure necessary for productive water uses (i.e., irrigation) and agricultural lands. Flash floods can trap and		Moderate		Flood early warning systems, proper placement of infrastructure, use of climate information to estimate likely size and frequency of floods	Flood early warning systems and, where appropriate, land use mapping will be used to inform irrigation and other water infrastructure (e.g., dams). Interventions here will be interwoven with interventions in DO2 to ensure land use		

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
			drown livestock Actual climate risk depends on location and topography					changes do not increase the potential for floods under increasing intensity of rainfall events.		
			Droughts (or contamination from flooding) decrease water availability increasing challenges for livestock production Related to production issues in DO2		High		Increased use of climate information to inform pastoralist movements to maximize access to available resources (eg water points near productive pasture land), and reduce overexploitation of certain high traffic areas where other options exist, and avoid conflict with farmers. Interweave interventions	The project will seek to ensure access to climate services (ie mapping of temporary water bodies, pastoralist alert systems, etc) to inform pastoralist movements to maximize access to available resources (eg water points near productive pasture land), and reduce overexploitation of certain high traffic areas where other options exist, and avoid conflict with farmers.		

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
							here with interventions in DO2 meant to increase the accessibility of services, specifically vet services.			
IR 1.1.3: Enhanced management of safe drinking water	15 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	With relation to water quantity, see climate risks outlined in IR 1.2	<p>Borehole infrastructure and experience already in place. It may be possible to drill deeper or tap into aquifers</p> <p>Localized appropriate technologies already in place (solar filters)</p> <p>Populations are familiar with chlorine tablets and other things for in-home purification</p>	High	<p>Use of climate information</p> <p>Early warning systems</p> <p>Opportunities to increase access to clean and safe drinking water, especially during low rainfall years and droughts can improve the livelihoods of women (and increase the ability to participate in activities) if they do not have to travel as far to find water.</p> <p>Opportunities exist to supplement surface water</p>	<p>Climate smart agriculture, use of climate information, natural resource management, pastoral land management, supplemental water from groundwater sources</p>	<p>This project element will be interwoven with the elements in DO2 associated with productivity and DO3 associated with health, as well as nested within the wider water management promoted in IR1.1.1. The exact interventions undertaken will depend on the local context.</p>	The exact and additional interventions undertaken will be crafted based on the location-specific needs, demands, and context and will be defined during the activity design process	None
			Increased temperatures may cause more favorable vector habitats in		Moderate		Use of improved water storage and purification methodologies	Water resources management activities will include improved water storage, management, and supply		None

1.1: Defined or Anticipated Project Elements*	1.2: Time-frame	1.3: Geography	2: Climate Risks*	3: Adaptive Capacity	4: Climate Risk Rating* [Enter rating for each risk: High, Moderate, or Low]	5: Opportunities*	6.1: Climate Risk Management Options	6.2: How Climate Risks Are Addressed in the Project*	7: Next Steps for Activity Design/Implementation*	8: Accepted Climate Risks*
			drinking water supplies (increased disease burden, link to DO3) Depends on drinking water system, USAID approaches tend to use less affected systems	Mini AEPs (larger system that serves multiple villages with a storage tank and single deeper well) Water user associations and service provider capacity building activities		supplies with groundwater supplies, which tend to be less sensitive to climate fluctuations. However, consideration will have to be given to the sustainability of groundwater sources.		tracking for sustainable acces. Contingency plans will include purification methodologies for crisis situations, and may involve deployment of purification materials. Preparedness approaches will also include water storage and purification		
			Increased rainfall and extreme weather events impact availability of clean drinking water (drought or contamination) Open defecation, location dependent,		Moderate		Contingency plan for massive climate shocks where drinking water supply is overwhelmed. Siting of drinking water infrastructure away from areas where it may be impacted by	Contingency plans will account for climate shocks where drinking water supply is overwhelmed/co ntaminated Drinking water infrastructure will be situated in areas to avoid contamination by flood waters		

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			system dependent				contaminated flood waters			
IR 1.2: Enhance sustainable productive land use										
IR 1.2.1: More equitable, secure access to land	20 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	<p>Increased flooding owing to more extreme rainfall events can destroy fields and erode arable land. This can in turn decrease access, especially for women</p> <p>Land tenure concerns will likely be exacerbated by reduced productive land availability. This would manifest via typical farmer vs. pastoralist conflicts, but also around artisanal mining or land</p>	<p>flood risk mapping</p> <p>recent land use maps</p> <p>marginalized populations (women, poor, etc) only get access to less favorable/ more climate-vulnerable lands (and once they are improved might be challenged for access)</p>	Moderate	<p>Opportunities exist to ensure appropriate land tenure arrangements decrease barriers to the uptake of climate smart agriculture and restoration of degraded land, especially for women and youth.</p> <p>Opportunities exist to ensure use of geo-spatial information in land use planning</p>	Early warning systems, appropriate use of land integrated into wider watershed management, increased land tenure to create incentives to improve degraded or flood prone land	This project element will be interwoven with the early warning system element to provide more timely, accurate and accessible flood warnings. Additional efforts will be included on appropriate land use, especially in flood vulnerable areas. This activity will also be integrated with those in DO5 to ensure that women are not more negatively affected by this.	Additional consideration and analysis will be conducted at the activity and implementation phases to ensure the most appropriate methods for addressing this risk are promoted.	None

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			for exploitation of other resources. Seasonal risk, higher during rainy season, location dependent, topography dependent							
			Increasing temperatures and changes in rainfall patterns can result in shifting agroecological zones thus changing land use distribution and access over time		High		Use of climate and weather information to inform flexible and adaptive land management. Opportunities to link this to improved land management and governance as there is a need to ensure that any governance structures are flexible enough to handle shifting agro-	The project will consider land use planning that takes into account future shifts in agroecological zones. In the near term this will also address growing land issues between farmers and pastoralists by working on natural resource management and tenure. Here it will be important to ensure that as land uses shift that all		

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							ecological zones.	stakeholders, especially women and youth benefit equally.		
			Large scale droughts can significantly degrade land, forcing people to find different livelihoods, sell assets or migrate		High		Contingency plan for massive climate shock reducing access to arable land. This would trigger additional support to sustain livelihoods and avoid negative coping mechanism that result in degraded land	This risk will be partly addressed through other aspects of the project working on improved land use, productivity, and resilience. However the project also includes a shock response mechanism that could provide additional support in targeted areas if those systems are overwhelmed.		None
IR 1.2.2: Improved management of natural resources conflicts	10 years	[List geog. scope] <i>Example: Rural</i>	Increased variability and droughts can reduce the availability of natural resources and decrease livelihoods,	RISE is already working on land use planning during its first phase	High	Include climate and geo-spatial information in development of land management plans. Create flexible and adaptable	Flexible and adaptive management that takes into account seasonal variations and longer-term changes in	The project will promote flexible and adaptive land management structures that can adjust to the quality of the agricultural and	Further consideration at the activity and implementation stages will be necessary to help identify the most appropriate	None

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			<p>causing competition over resources. These conflicts are most likely to occur between pastoralists and farmers</p> <p>Long term changes can result in shifting agro-ecological zones, that bring competing land uses into closer proximity, or cause them to overlap.</p>			management structures that are able to incorporate climate information and remain effective as climate continues to change.	<p>resource availability.</p> <p>Contingency plan for massive climate shock that overwhelms local management capacity</p> <p>Equitable land titling and then conflict mitigation procedures can help to abate long-lasting effects.</p>	pastoralist season as well as to shifting land uses related to longer term changes. These systems may also be supplemented with climate information to allow them to be more proactive to seasons when conflicts are more likely to occur.	activities to promote.	
			Decreased availability to water could induce localized conflicts over resource access.		High			This project element will be interwoven with IR 1.1 where improve water management under future climate scenarios will help reduce		None

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								conflict over water. The project will also seek to harness water issues as a means to promote better governance of natural resources		
IR 1.2.3: Enhance climate smart agricultural (CSA) practices	20 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	CSA is a climate risk management option, however the practices promoted need to be appropriate for the local conditions (physical, climate, socio-cultural context) Massive climate shocks or significant deviations away from normal conditions may render	Many CSA practices are already being undertaken in the Sahel, including FMNR	Moderate	Ensure that CSA practices are accessible to all community members. Ensure that the benefits of undertaking such practices are equitably distributed (link to land tenure for women and youth). It will be important to integrate climate information and flexibility and adaptability into these efforts.	CSA is a climate risk management option, however there will be a threshold where these practices are no longer sufficient to maintain productivity. A contingency may need to be developed for when that threshold is exceeded.	Climate smart agriculture is a risk management strategy, but the project will ensure that the practices promoted are appropriate for the local context and climate.	Further consideration at the activity and implementation stages will be necessary to help identify the most appropriate activities to promote.	None

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			<p>some of these practices less effective</p> <p>Actual risks depends on the specific practice</p>							
IR 1.2.4: Improved pasture management and restored land	20 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	<p>Improved pasture management and restored land can be a climate risk management option. However, similar to CSA, the practices promoted need to be appropriate to the context (physical location, climate and socio-cultural circumstances).</p> <p>Massive climate shocks may</p>	Many options for pasture and degraded land improvement exist and are known and practiced in the Sahel.	High	<p>Interventions need to ensure that benefits achieved are equitable to all community members, especially women and youth.</p> <p>It will be important to incorporate climate information, as well as flexibility and adaptability into these efforts.</p> <p>Improved management practices may require collaboration with governance interventions to ensure resource tenure provides</p>	<p>This project element is a climate risk management option. However, a massive climate shock could reduce the ability to appropriately manage this land, and thus a conflict/displacement-focused contingency may need to be developed for when this threshold is exceeded.</p> <p>Ongoing landscape restoration and</p>	<p>The project will ensure that improved pasture management and restored land are done in a climate appropriate manner. This will depend on the local context, including topography, soil type, land use ...</p> <p>As this activity is also a risk mitigation measure it will be interwoven with other activities, especially IR 1.1 where it will help ensure the watershed is managed in a holistic manner.</p>	Further consideration and analysis will be required at the activity and implementation level to ensure practices promoted are appropriate to the local context	None

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			<p>overwhelm the ability of these interventions to maintain productivity.</p> <p>Actual risk depends on whether "improved" implies "climate smart" or not, as well as the specific strategies employed.</p>			incentives for any expenses incurred.	rehabilitation, including SWC and FMNR/CF, etc. increase resilience of lands to climate shocks			
IR 1.3: Improved management of shocks, risks and stresses										
IR 1.3.1: Enhanced preparedness	20 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	Enhanced preparedness is a climate risk management approach, but it needs to be right-sized for the context (e.g., climate variations and local capacities/needs)		High	<p>Significant opportunities exist to integrate this project element into efforts across the RISE portfolio as it can help mitigate risks to productivity, and thus to many upstream risks to DO3, DO4, and DO5</p> <p>As noted</p>	<p>Use of climate information and early warning systems to inform local preparedness</p> <p>Improved early warning systems</p> <p>Many of the activities in IR1.2 and in</p>	This project element underlies the broader strategy of the project. Through the use of climate information, improved governance and health systems, the targeted zones will be better prepared for shocks and	Investigate additional options to partner around mobile technology, such as banking and early warning systems.	None

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			Effectiveness for different shocks (and concurrent, consecutive) depends on all components within this IR and in other DOs.			elsewhere, increased use of climate information and early warning systems are a key aspect of improving preparedness. Women and youth are likely to experience preparedness differently than men. Contingency plans may need to be developed when massive climate shocks occur that overwhelm local preparedness	DO2 can also increase preparedness, at a local level and need to be interwoven with governance activities in DO4 and health activities in DO3. Contingency planning for large climate shocks	stresses. Similarly, improved agricultural practices will make people less vulnerable, and thus more prepared to weather a shock or stress		
<i>IR 1.3.2: Improved early response</i>	15 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	Improved early response is a climate risk management approach, but it needs to be right-sized for the context (e.g., climate variations and		High	Significant opportunities exist to integrate this project element into efforts across the RISE portfolio. As noted elsewhere, increased use of climate information and early warning	Use of climate information and early warning systems to allow for proactive early response (e.g., prepositioning of supplies) Increased	The use of climate and weather information combined with a more robust monitoring and reporting system will allow earlier response to shocks and stresses. This	Investigate additional options to partner with existing actors on EWS and climate information services. Refine the approach to fill gaps in existing decision-making systems	None

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			local capacities)			<p>systems are a key aspect of improving early response</p> <p>Contingency plans may need to be developed when massive climate shocks occur that overwhelm local response capacities</p> <p>Efforts under other DOs, especially DO4, could enhance the capacity of sub-national governance structures to participate in early response activities.</p>	<p>capacities at all levels of society will facilitate quick responses.</p> <p>Contingency planning for large climate shocks that might overwhelm local response capacities.</p>	<p>will need to be combined with more efficient decision-making systems that can incorporate this information and make decisions quickly. The shock response mechanism may be built into this aspect as it will be necessary to determine what level of threshold has been exceeded and thus the level of response needed.</p> <p>The project also includes efforts to have preliminary discussions with other actors in the Sahel to devise appropriate response actions before they are needed, enabling</p>		

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								more efficient implementation.		
IR 1.3.3: Strengthened recovery capacity	15 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	Increasing frequency or magnitude of climate shocks (especially droughts) could overwhelm the capacity of resilience systems to provide recovery support or reduce the capacity of government officials to focus on recovery especially in the long term (addressing concurrent and consecutive shocks)		High	Opportunities exist to essentially build back better. This will require that recovery efforts include an understanding of likely future climate shocks and stresses to avoid maladaptation during recovery.	Strengthened recovery capacity is a risk management strategy. Here it will be important to ensure that the capacities are built at various levels. Here climate information could be used to help forecast the occurrence of a shock or stress, so that resources necessary to recover are preplaced, speeding up response and recovery. Furthermore, it is necessary to ensure recovery efforts do not	The project will interweave this project element with project elements related to improved livelihoods and improved health. This will ensure that people are supported in their recovery without having to resort to negative coping mechanisms. The project also includes efforts to more proactively react to shocks and stresses, which will enhance recovery by limiting the initial impact. The project will interweave this project element with those under	Finalize the shock response approach to enhance collaboration with humanitarian assistance actors	None

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							create future climate risks. Opportunities exist to rebuild better	DO4 to ensure that governance systems enable instead of inhibit recovery efforts.		
			A massive climate shock could result in an influx external assistance that undermines longer-term development or decreases will to take ownership of own solutions		Moderate		Include a shock response mechanism that can realign some resources after a massive shock to ensure that an influx of humanitarian assistance complements and supports longer-term development objectives. Work with humanitarian organizations to develop a climate sensitive approach before the shock occurs,	The project will include a shock response mechanisms that will shift some resources to greater collaboration with humanitarian assistance to sure the efforts are complementary, and build long-term ownership over resilience actions. The project will also include early discussion with other actors in the area to consider recovery efforts before they are needed.		None

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<i>IR 1.3.4: Enhanced social capital</i>	15 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	<p>Enhancing social capital is a risk management approach. However, large scale droughts or frequent smaller shocks could overwhelm the social/resilience systems or reduce their effectiveness</p> <p>Actual climate risk depends on geography, socio-cultural/socio-economic circumstances.</p>		Moderate	<p>Opportunities exist to link social capital to the use of climate information and early warning systems. Not all community members will have access to the same information, so social networks can help in disseminating that information.</p>	<p>Efforts need to ensure that all community members, especially women and youth, benefit from improved social capital.</p> <p>Contingency plans may need to be developed for massive shocks that overwhelm the system or recurrent shocks that slowly degrade the ability of these networks to be effective.</p>	<p>The project will interweave social capital building with other project elements. The project also contains a shock response mechanism that will scale up social capital interventions during large shocks as social capital has been shown to be one of the strongest pathways to resilience.</p>	<p>Further consideration will be necessary at the activity and implementation level as building social capital is context specific. It will also be necessary to ensure that other governance structures build strengthened do not erode social capital.</p>	None

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<i>IR 1.3.5: More responsive relationships between local and national levels</i>	15 years	Niger (Zinder, Maradi, Tillaberi, Tahoua) and Burkina (Centre-Nord, Sahel, East?)	<p>This project element is a risk management strategy</p> <p>Increased demand for decentralized funding, centralized support for resilience and shock response could strain relationships.</p> <p>Large or recurrent local shocks or multiple shocks in different locations could overwhelm national systems capacity to engage and respond in all places in a</p>		Moderate	<p>Significant opportunities exist to ensure that more responsive relationships increase the availability and use of climate information and early warning systems at all levels. The effectiveness of the rest of this IR will depend on improving relationships and linkages between national and local levels</p> <p>Very strong linkages to the governance efforts in DO4.</p>	Increase the use and dissemination of climate and weather information across governance scales. This includes pushing out warnings and forecasts, but also pulling up monitoring information to ensure an accurate assessment of the impacts in different areas	The project will increase the use of climate and weather information at all governance scales. This will likely include acting as information disseminators out to rural communities, as well as helping roll up monitoring data back up to national institutions.	Further consideration is necessary to both understand the climate information landscape in both countries, especially concerning current DFID and WB investments. It will also be important to consider what is the most effective way for information to be communicated between governance levels.	None

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			timely manner.							
Next step: Timeframe	Next step: Geog.	Next step: Climate Risks	Next step: Adaptive Capacity	Next step: Risk Rating	Next step: Opps.	Next step: Risk Mgmt. Options	Next step: Selected Options	Next step: Next Steps	Next step: Accepted Risks	Finished!